

THE AMERICANA ANNUAL

An Encyclopedia of Current Events

1923



Editor

A. H. McDANNALD, B.L.

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J. B. McDONNELL, A.B.

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FOREWORD

In this, the first issue of *THE AMERICANA ANNUAL*, it is important to state clearly its organization, scope and fundamental purposes. Arranged alphabetically, after the manner of the ordinary works of reference, it is intended to be a concise and independent encyclopedia of current events for the use of editors, educators, librarians executives, and, in fact, for everyone who would keep abreast of world progress, who wants to know the real significance of the events of the past year and who desires a ready source of dependable information on recent developments of lasting importance. Used with an encyclopedia for the historic background, it brings such a work fully down to date.

In dealing with a multitude of subjects the *ANNUAL* aims at comprehensiveness rather than highly specialized treatments, intelligible only to the expert. In the period covered by it aeronautics, art, medicine and surgery, wireless telephony, and almost every branch of science and industry have made enormous strides. These advances have been faithfully chronicled.

Among the outstanding features of this issue — to mention only a few — are the articles dealing with Agriculture in the United States, Anthropology, Archaeology, Architecture, Astronomy, Cancer and Its Control, Chemistry, Co-operative Movement, European Debts and America's settlement with Great Britain, Hydroelectric Development, Horticulture, International Peace and Arbitration, Medicine and Surgery, Merchant Marine of the United States, Meteorology, Progress in Education, National Debts of the World, events in the Near East, Painting and Sculpture, Physics, Radio Telephony and Telegraphy, the Reparations question, the Washington, Lausanne and other conferences, and World International Trade. The articles on the various countries and States show the progress of each in agriculture, industry, commerce, politics, government, sociology, finance, etc., while, as regards the United States, Canada and Mexico there are comprehensive reviews of all the activities of these nations. The great resources of the world — petroleum, cotton, iron, copper, sugar, etc., will be found adequately treated from the American and international viewpoints.

Over one hundred contributors co-operated in the preparation of the *ANNUAL* and to each the Editor desires to make appreciative acknowledgment. He desires also to express his thanks to the university and college presidents, and the many public officials — Federal and State — who courteously furnished statistical and other data.

A. H. McDaniel

PUBLISHER'S NOTE

In the building of *THE AMERICANA ANNUAL*, its projectors had but one thought in mind — to make it the best yearly encyclopedic survey published of the world's activities and progress.

It is hoped it will be found a worthy companion volume to its parent publication, *The Encyclopedia Americana*. The *ANNUAL* itself furnishes the best testimonial of its merits. Its publication places before the American people in permanent form a really up-to-date, authoritative and comprehensive record of recent events.

The painstaking efforts of Mr. A. H. McDannald, the Editor, and his staff have made the creation of the work possible; but we desire also to express our appreciation of the enthusiastic co-operation and support accorded him by contributors, public officials, secretaries of national organizations and others.

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THE AMERICANA ANNUAL

A

ABBOTT, Lyman, American clergyman, editor and author: b. Roxbury, Mass., 18 Dec. 1835; d. New York City, 22 Oct. 1922. His father was Jacob Abbott, founder of the Eliot Church in Roxbury and author of the famous 'Rollo Books.' The younger Abbott was graduated from New York University with the degree of A.B. in 1853, thereafter studied law and was admitted to the New York Bar in 1856. Quitting the legal profession, he studied theology and was ordained to the Congregational ministry in 1860. His first charge was at Terre Haute, Ind., where he remained five years. He then came to New York and was pastor of The New England Church from 1865-69 when he temporarily abandoned the pulpit in order to devote his time to literary work. He returned to the ministry in 1888 when he accepted a call to the pastorate of Plymouth Church, Brooklyn, as successor to Henry Ward Beecher. This charge he held until 1899 when he retired in order to devote his entire time to literary pursuits. He entered the literary field as editor of the "Literary Record" of *Harper's Magazine*. He was editor also, for some time, of *The Illustrated Christian Weekly* and later became associate editor with Henry Ward Beecher of *The Christian Union*, afterward *The Outlook*, of which he was editor-in-chief from 1893 until his death. From 1865-68 he served as secretary of the American Union Commission (Freedmans). The degree of D.D. was conferred upon him by New York University in 1876, by Harvard in 1890 and by Yale in 1903. The degree of LL.D. was conferred upon him by Western Reserve University in 1900 and by Amherst College in 1908. Miami University conferred the degree of L.H.D. upon him in 1909. In 1857 Doctor Abbott married Miss Abby Frances Hamlin. She died in 1907. Six children survived him, Lawrence F. and Ernest H., who are connected with *The Outlook*; Mrs. Francis (Harriet F.) Jordan of Brooklyn, Herbert V., a professor in Smith College; Theodore J., a practicing physician in New York, and Miss Beatrice V., who lived with her father. France decorated Doctor Abbott with the insignia of the Legion of Honor in recognition of his services to that country and the Allies. The following is a list of Doctor Abbott's published works: 'Jesus of Nazareth'; 'Old Testament Shadows of New Testament Truth'; 'A Layman's Story'; 'How to Study the Bible'; 'Illustrated Commentary on the New Testament' (1875);

'Dictionary of Religious Knowledge,' in collaboration with T. J. Conant, (1876); 'A Study in Human Nature' (1885); 'In Aid of Faith' (1891); 'Life of Christ' (1894); 'Evolution of Christianity' (1896); 'The Theology of an Evolutionist' (1897); 'Christianity and Social Problems' (1897); 'Life and Letters of Paul' (1898); 'The Life That Really Is' (1899); 'Problems of Life' (1900); 'Life and Literature of the Ancient Hebrews' (1900); 'The Rights of Man' (1901); 'Henry Ward Beecher' (1903); 'The Other Room' (1904); 'The Great Companion' (1904); 'Christian Ministry' (1905); 'Personality of God' (1905); 'Industrial Problems' (1905); 'The Home Builder' (1908); 'The Temple' (1909); 'The Spirit of Democracy' (1910); 'My Four Anchors' (1911); 'America in the Making' (1911); 'Letters to Unknown Friends' (1913); 'Reminiscences' (1915); 'The Twentieth Century Crusade' (1918); 'What Christianity Means to Me' (1921); 'Silhouettes of My Contemporaries' (1921).

ABILENE CHRISTIAN COLLEGE, a coeducational institution, under the auspices of the Church of Christ, founded in 1906 and located at Abilene, Texas. In 1922-23 it had a faculty of 35 members, 728 students, property valued at \$350,000 and an income of \$10,000. Jesse P. Sewell is president.

ABORTION DISEASE. See VETERINARY MEDICINE AND SURGERY.

ABYSSINIA, known to the ancients as Ethiopia, an empire of north Africa, lying to the south of the Italian colony of Eritrea and north of British East Africa and Italian Somaliland, and having an area of 350,000 square miles and a population of 8,000,000. The reigning sovereign is the Empress Waizeru Zauditu, daughter of the late Emperor Menelik. She was crowned at the capital, Addis Abbaba, on 11 Feb. 1917. At the same time Ras Taffari was proclaimed heir to the throne. Feudal ideas pervade the administration and the political institutions of the country. Slavery is a recognized institution.

There is a standing army of 100,000 men approximately and a state militia of about 200,000 men. Both organizations are poorly equipped from a modern point of view.

The population is largely of Semitic origin. The ruling class are the Shoans who number about 1,500,000 and are Christians. Other race groups are the Gallas and the Danakil, both

Moslems, the Tigrians also of Semitic descent and the former ruling caste, and the Falashas who are of the Jewish faith. There are also some negroes, Armenians, Greeks and a few Europeans.

The Abyssinians are members of the Alexandrian Church from their conversion in the fourth century to Christianity. The chief bishop is always a Copt and is appointed and consecrated by the Coptic Patriarch of Alexandria. There are at present about 100,000 ecclesiastics who are governed chiefly by a native dignitary called the Echehgeh.

While education of all male children over the age of 12 was enjoined by an edict of 1907 it has never been enforced and remains a dead letter. There are a few schools but the attendance is very irregular as there is a popular prejudice against schools. The legal system is theoretically based on the Justinian Code but in practice justice is administered by the provincial governors and by petty chiefs with the right of appeal to the Emperor. Foreigners are tried by a mixed court or by their own consular courts.

Agriculture.—This industry is in a backward state. Cotton, sugar cane, dates, coffee and grapes are the chief crops. There are great numbers of cattle, sheep and goats. Horses and mules are raised everywhere for pack animals. Barley, millet, wheat and tobacco are grown in small quantities.

Industry.—The manufacturing industries are not well developed. Iron is found in considerable quantities and is made into articles of common use, such as hatchets, knives, etc. Coal, silver, copper and sulphur have been found in small quantities. Rubber and good lumber abound in some of the forest regions but await development.

Commerce.—Most of the commerce of the country is carried over the line of the Franco-Ethiopian Railway Company, extended to the capital in 1917. This road runs to Jibuti in French Somaliland from the capital and has a total length of 495 miles. The exports consist mainly of hides, coffee, ivory, and butter. Cotton goods, sugar, oil, and foodstuffs are the chief items on the import list. These articles come from France, Italy, England and the United States.

There are over 1,000 miles of telegraph line connecting the chief populous centres and linking up with the French colony of Somaliland. There are also telephone lines between the larger centres—cities they cannot be called in the western sense. The Menelik dollar is the standard coin of the country. It is worth about 50 cents in terms of the currency of the United States. It weighs slightly over 28 grammes and is .835 fine. The coin most in circulation is the Maria Theresa dollar of the same nominal value as the Menelik dollar.

The metric system of weights and measures is in use on the frontiers and generally in the export and import trade. In the interior a native system of weights and measures prevails.

ACADEMY, French, (L'Académie Française), the first and most important of the five academies of the Institut de France, founded in 1630 by Cardinal Richelieu, abolished by the Revolution, but restored in 1795 and reorgan-

ized in 1816. It consists of 40 regular members, who are often referred to as "the Forty Immortals." There are in addition 10 members-at-large, and from these the regular members fill vacancies. There are also foreign and corresponding members of the Academy. The "Immortals" at the end of 1922 were, with the year of their election, as follows: Le Comte d'Haussonville (1888), Charles Louis de Saulses de Freycinet (1890), Louis Marie Julien Viaud ("Pierre Loti," 1891), Paul Bourget (1894), H. G. Anatole Francois Thibault ("Anatole France," 1896), Gabriel Hanotaux (1897), Henri Emile Lavedan (1898), Frederic Masson (1903), Rene Bazin (1903), Alexandre Ribot (died January 1923; elected 1906), Maurice Barres (1906), Maurice Donnay (1907), Jean Richepin (1908), Raymond Poincare (1909), Eugene Brieux (1909), Rene Doumic (1909), Marcel Prevost (1909), Henri de Regnier (1911), Marshal Lyautey (1912), Pierre de la Gorce (1914), Henri Bergson (1914), Marshal Joffre (1918), Louis Barthou (1918), Rene M. A. Tardiveau ("Rene Boylesve," 1918), Francois de Curel (1918), Alfred Baudrillard (1918), Marshal Foch (1918), Georges Clemenceau (1918), Jules Cambon (1918), Henry Bordeaux (1919), Robert de Flers (1920), Joseph Bedier (1920), Louis Chevrillon (1920), Pierre de Nolhac (1922), Georges Goyau (1922).

ACADEMY OF SCIENCES, National.

By act of Congress, approved by President Lincoln on 3 March 1863, 50 eminent American scientists of the period were selected to form a body corporate under the name of the National Academy of Sciences. It was further provided that "the Academy shall, whenever called upon by any department of the Government, investigate, examine, experiment, and report upon any subject of science or art, the actual expense of such investigations, examinations, experiments, and reports to be paid from appropriations which may be made for the purpose, but the Academy shall receive no compensation whatever for any services to the Government of the United States."

The membership of the Academy is limited to 250 active members and 50 foreign associates. The members are elected in recognition of eminent contributions to science, upon nominations from the sections of the Academy. At the annual meeting of 1922, the following were elected:

Sections		Members Elected
Mathematics	..	Luther Pfahler Eisenhart
Astronomy	....	William Hammond Wright
Physics	.....	George Kimball Burgess
Engineering	... Herbert Hoover, Ambrose Swasey	
Geology	.....	Edward Wilber Berry, George Perkins Merrill
Chemistry	....	George Augustus Hulett
Botany	.....	No elections
Zoology	.....	Charles Rupert Stockard, Charles Atwood Kofoid
Physiology	...	Rufus Cole, Joseph Erlanger
Anthropology	..	Carl Emil Seashore

Albert Einstein was elected a foreign associate.

There are now 205 active members and 35 foreign associates.

As a means of stimulating scientific activity, medals and prizes are conferred at Academy dinners for distinguished contributions to science, and grants in aid of researches are made from the income from trust funds administered by the Academy. The medals awarded during 1922 are as follows:

The Henry Draper Medal, for eminent contributions to astronomical science, to Henry Norris Russell.

The J. Lawrence Smith Medal, for important investigations of meteoric bodies, to George Perkins Merrill.

The Daniel Giraud Elliot Medal and Honorarium, to Othenio Abel, in recognition of his work, 'Methoden der paläobiologischen Forschung.'

Full accounts of grants in aid of research are published in the 'Annual Reports' of the Academy.

At the request of the President of the United States in 1916, the Academy undertook the organization of research for the solution of military problems. The committee appointed by the president of the Academy for the supervision of this work was designated as the National Research Council (q.v.). So effective was the work accomplished by this committee during the war that, by executive order of the President of the United States, dated 11 May 1918, the National Academy of Sciences was requested to perpetuate the National Research Council.

The publications of the Academy include its 'Annual Reports,' the monthly issues of its *Proceedings*, and its occasionally published *Memoirs*. The Research Council issues a *Bulletin* and a *Reprint and Circular Series*.

A building for the National Academy of Sciences and the National Research Council, facing the Lincoln Memorial in Potomac Park, Washington, D. C., is now in process of erection. The building will be of marble with a frontage of 260 feet, a depth of 140 feet, and a height of 60 feet from the first floor. It will contain the offices and library of the National Academy of Sciences and National Research Council, an auditorium for the annual meeting and other sessions of the Academy, and halls for the exhibition of latest contributions to world knowledge. It will be the national home of science in America.

There are two meetings of the Academy held each year, the annual meeting in Washington, and the autumn meeting at such place as may be selected by the Academy. The autumn meeting for 1922 was held in New York City, 14, 15 and 16 November, the sessions for the three days respectively being at Columbia University, the Rockefeller Institute for Medical Research, and the United Engineering Societies Building.

The principal officers of the Academy are:

President, Charles D. Walcott, Smithsonian Institution, Washington, D. C.; vice-president, A. A. Michelson, the University of Chicago, Chicago, Ill.; foreign secretary, R. A. Millikan, Pasadena, Cal.; home secretary, Charles G. Abbot, Smithsonian Institution, Washington, D. C.; treasurer, F. L. Ransome, National Research Council, Washington, D. C.

CHARLES G. ABBOT,
Home Secretary.

ACCIDENTS. A wide divergence marked the estimates of the number of deaths from accidents in the United States during the year 1922. The lowest estimate placed the number of deaths at 75,000 and the highest estimate gives the number at 95,000. An even greater divergence is noticeable in the estimates as to the total number of injuries from accidents during the same year, the latter varying from 2,000,000 to 10,000,000. The reasons for this divergence are many. The Census Bureau covers merely the registration area of the United States and thereby many States are excluded from its tables. Even in the registration area the figures are open to question since in many cases the attending physicians give the final cause of death in the death certificate and make no mention of the contributory cause. The statistics of the casualty and insurance companies are defective for the same reason. Industrial accidents and deaths come nearer the truth owing to the fact that the figures are more carefully compiled by the compensation boards and industrial firms but their figures necessarily exclude all classes of accidents other than industrial. Illiteracy as a cause of industrial accidents has received great attention of late years. It is estimated that one-half of the accidents in factories is due to ignorance of the English language. The United States Department of Labor also proved in a recent survey that the rate of accidents in the iron and steel industry was higher among the non-English speaking operatives than among those who have a knowledge of English. In the mining industries the Director of the United States Bureau of Mines is authority for the statement that non-English speaking foreigners suffer twice the fatalities that the English speaking miners do.

Accidents in all branches of the mineral industry of the United States, including coal mines, metal mines, quarries, coke ovens and metallurgical plants except iron blast furnaces resulted in the deaths of 2,367 men in 1921. The figures for 1922 are estimated to be less than these because of the stoppage of the coal mines for several months beginning 1 April. Non-fatal injuries at coal mines are not reported to the Bureau of Mines; for all other mines, quarries, etc., the number of employees injured was 35,416 in 1921 as against 56,057 in 1920. The relatively great importance of public accidents as a factor in accident mortality has been signally demonstrated by statistics from several sources. An analysis of fatalities through accident in the United States for a single week showed that, of 1,208 accidental deaths, no fewer than 758, or 62.7 per cent, were caused by public accidents; 359, or 29.7 per cent, were the result of industrial accidents; and the remaining 91, or 7.6 per cent, were the result of home accidents. These data were gathered by the National Safety Council with the co-operation of 200 city and county coroners; the secretaries of 35 local safety councils, and 8,000 representatives of the Council's member companies.

A consideration of the causes of accidental deaths for the entire United States for a recent year showed the leading causes were falls, automobiles, burns, railways and drowning. Of these, burns result largely from home accidents; falls are more equally divided among public, home and industrial accidents; but the three remaining causes—automobiles, railways

and drownings — are almost entirely public accidents. These facts are sufficient evidence of the enormous amount of intensive safety work that remains to be done in the field of public accidents. Efforts were made in several cities of the United States to educate the public in the prevention of accidents, and with noteworthy success in New York, Saint Louis and Detroit. A "Safety Week" campaign was inaugurated in New York to reduce that city's annual toll of accidental deaths. Detroit reduced by nearly 50 per cent the number of accidental deaths in one year, and Saint Louis by a campaign of education lessened the number of accidental deaths of school children by 60 per cent and Baltimore in the course of one "safety week" campaign wholly eliminated during that week deaths from traffic accidents, railroad crossing accidents and deaths of school children. The National Safety Council continued its program for safety instruction in the public schools of the country and in many educational systems instruction in the promotion of accident prevention was undertaken. Saint Louis was a pioneer in this field and was closely followed by Detroit. All agencies are agreed that the only way to effect changes in present-day conditions is through education. This is being carried on through the press, from the platform and in the schools. The effective means is through school education. This not only reaches the child and builds up in him the necessary controls during his plastic period of growth, but the intensity with which these experiences take hold of the child, brings the instruction into the home and reaches adults. Thus the school provides for a new and ever-increasing complexity of social life and civilization. For automobile accidents, see under AUTOMOBILE, and for mining accidents, see MINES, BUREAU OF.

The annual report of the inspector of factories and workshops for Great Britain for the year 1921 was issued late in 1922. During the year, 92,565 accidents were reported, of which 951 were fatal, as compared with 138,773, of which 1,404 were fatal in 1920. The decline was almost entirely due to the phenomenal inactivity of industry throughout the year, including the prolonged coal strike which resulted in many iron mills and blast furnaces being completely closed down for a long period. These industries were heavy accident producers.

The number of accidents due to electricity was 322, 32 being fatal — a reduction of 20 per cent in the total and of 50 per cent in the fatal cases compared with each of the previous two years. There were 230 cases of lead poisoning, of which 23 were fatal. In 1900, the number was 1,058, of which 38 were fatal. There were no cases of phosphorus or mercury poisoning, but one case of arsenic poisoning. The figures for anthrax were 25 cases, with six fatalities. This low figure is held to be partly due to the inauguration of the Government station for the disinfection of wool at Liverpool.

ACIDS — Nitric, Sulphuric and Mixed. According to statistics furnished by Federal Census Bureau there was a considerable decrease in the activities of the establishments engaged primarily in the manufacture of sulphuric, nitric and mixed acids during 1921 as compared with 1919, the preceding census year,

the total value of products reported for the first mentioned year being \$20,529,000 compared with \$31,470,000 in 1919, a decrease of 34.8 per cent. Of 35 establishments reported as engaged in the manufacture of these acids in 1921, five were located in New Jersey, five in Pennsylvania, four in Ohio, three in California, three in New York, two in Maryland, two in Virginia and one in each of the following States: Alabama, Arkansas, Colorado, Connecticut, Illinois, Kansas, Massachusetts, South Carolina, Tennessee, Texas and Utah. New Jersey was the leading State in the industry in 1921, having produced 27 per cent of the total value of the products of that year. The decrease in production was accompanied by corresponding decreases in salaries and wages, cost of materials, etc. The number of persons engaged in the industry in 1921 was 3,139, compared with 5,860 in 1919. Salaries and wages paid in 1921 amounted to \$5,243,000, compared with \$10,096,000 in 1919. Materials used in 1921 cost \$9,714,000, compared with \$15,857,000 in 1919. The acids referred to are produced to a considerable extent by establishments engaged primarily in the manufacture of other products — sulphuric acid by manufacturers of fertilizer, explosives, chemicals in general and petroleum refineries; nitric and mixed acids by manufacturers of explosives and chemicals in general. For this reason the figures given below are not to be taken as representing total production. The sulphuric acid produced by establishments engaged primarily in that industry totaled 1,457,500 tons valued at \$15,332,700 in 1921, compared with 1,685,300 tons valued at \$18,113,000 in 1919. This was approximately 50 per cent of the total production of all industries.

Nitric acid produced in 1921 by establishments engaged primarily in the manufacture thereof was 2,110 tons, valued at \$663,700, compared with 3,150 tons valued at \$536,700 in 1919.

Mixed acids produced in 1921 by establishments engaged primarily in the manufacture thereof totaled 16,400 tons valued at \$1,316,000, compared with 28,200 tons valued at \$2,671,500 in 1919. In each case tons of 2,000 pounds are meant.

Under date of 28 Aug. 1922 the Federal Census Bureau issued a report stating that the manufacturers of fertilizer producing sulphuric acid and acid phosphate had on hand 1 Jan. 1922, 129,610 net tons of sulphuric acid (basis of 50° Be') and that during the six months which ended 30 June 1922 they produced 560,351 tons, consumed in the manufacture of fertilizer 650,189 tons and had on hand on 30 June 1922 110,657 tons. Purchases of sulphuric acids during the six months' period referred to exceeded the sales, according to this report, by 70,885 tons. The same establishments reported that their stocks of acid phosphate on 1 Jan. 1922 amounted to 2,129,339 net tons, containing 32,818,093 units of available phosphoric acid, averaging 15.9 per cent. They further reported that there were manufactured during the first six months of 1922, 1,198,724 tons of acid phosphate, containing 20,144,992 units, averaging 16.8 per cent. During the same six months there were sold 1,053,437 tons of acid phosphate, while there were used in manufactured goods sold 1,031,240 tons, making the total of acid phosphates sold as such

or in manufactured goods 2,084,677 tons. It was stated that the data above given were compiled from reports made by 198 fertilizer establishments, of which 69 manufactured sulphuric acid. These establishments it was asserted represent practically all of the fertilizer industry in the country other than the dry mixing plants.

ACOUSTICS IN SEA-DEPTH MEASUREMENTS. See Physics.

ACTORS' EQUITY ASSOCIATION. **The.** An organization of stage and other performers founded at New York (affiliated with the American Federation of Labor) 26 May 1913. Its jurisdiction extends over dramatic and musical comedy productions, certain classes of tabloids, tent shows and carnivals. Its first president was Francis Wilson. Originally it had no connection with the American Federation of Labor. It was formed to correct certain longstanding abuses, such as prolonged rehearsals without pay, an unlimited number of performances without extra pay, dismissals without notice, probationary rehearsals often lasting eight and ten weeks at the end of which time the actor was dismissed without salary for the time so given, the custom of compelling actresses to supply expensive wardrobes, often of a kind which could not be used off stage and which were used for only a few weeks and possibly days owing to the short run of the play and similar abuses. Correction of these points the Actors' Equity incorporated in a contract which they attempted to have issued by the United Managers' Protective Association. This they were unsuccessful in doing and, for greater strength, on 19 July 1919, the Actors' Equity Association affiliated with the American Federation of Labor. The Producing Managers' Association, an outgrowth of the United Managers' Protective Association, refused to recognize the Equity or to issue its contracts. On 7 Aug. 1919 the Actors' Equity Association called a strike on the Producing Managers' Association, closing every theatre in New York in which legitimate productions were made. The strike ended 6 Sept. 1919, the actors winning recognition of their association and a contract which limited free rehearsals to four weeks with dramatic productions, five with musical, extra pay for all over eight performances in a week, probationary rehearsals for ten days only, the actor to receive two weeks' salary if dismissed after this time; pay for layoffs, a week's notice of the closing of a play, a two-weeks' individual notice and a guarantee of at least two weeks' salary after the opening of the play. In September 1921 the Actors' Equity put into effect the Equity Shop ruling affecting all independent managers, that is those managers not belonging to the Producing Managers' Association. Equity Shop means that no member of the association will appear in any production which is not 100 per cent Equity. At the same time the association obligated itself to accept for membership any actor who applied, providing he had no affiliations detrimental to the association. Any independent manager is privileged to have a 100 per cent non-Equity company. The association gives legal aid free of charge. Much of its work has been that of relieving the condition of stranded companies and investi-

gating the finances of managers engaging companies. Equity members are assured of the financial standing of their employers during the early days of rehearsal. The association has also interested itself in certain legislation affecting the theatrical profession, such as securing sanitary theatres, etc. Its officers for the year 1921-22 were: President, John Emerson; Vice-President, Ethel Barrymore; Second Vice-President, Frank Bacon (deceased 1922); Executive Secretary, Frank Gillmore. With the exception of the executive secretary, who is appointed by the council, all other officers are elected. The governing body of the association is the council elected with the officers at annual meetings. It has 10,000 members in good standing, including motion picture actors. The main office is at 115 West 47th street, New York; there are branch offices in Chicago, Kansas City and Los Angeles. The Chorus Equity Association is a branch of the Actors' Equity, formed 19 Aug. 1919 during the strike. Its contract is similar to that of the Actors' Equity, with the exception of the fact that chorus people rehearse four weeks instead of five, they have a minimum salary, all costumes including shoes and stockings must be furnished as well as sleeping cars for traveling companies. Its membership consists of chorus people employed in the field over which the Actors' Equity has jurisdiction. Its president, vice-presidents and council are identical with that of the Actors' Equity. It has an executive committee elected from its own membership, a chairman of the executive committee who has a seat on the Actors' Equity Council and a recording secretary. Its executive secretary is appointed by the council. The executive secretary for the year 1921-22 was Dorothy Bryant. It has 2,000 members in good standing.

ADELPHI COLLEGE, a non-sectarian educational institution for women, founded in 1896 and located in Brooklyn, N. Y. Statistics for 1922-23 show a faculty of 25 members, 337 students, property valued at \$375,000 and an income of \$100,000. Frank D. Blodgett, A.M., LL.D., is president.

ADEN, a peninsula and town on the southwest coast of Arabia, about 105 miles east of the Strait of Bab-el-Mandeb, which has been a British possession since 1839. Included in the settlement are the island of Perim, at the entrance to the Red Sea; Little Aden, a peninsula not unlike Aden itself; the settlement and town of Shaikh Othman on the mainland, with the villages of Imad, Hiswa and Bir Jabir. The Kuria Muria islands, off the coast of Arabia, also are attached to Aden. The entire protectorate, which is subject to the Bombay Government, has an area of approximately 9,000 square miles. Aden, itself, has an area of 75 square miles; Perim, an area of five square miles. The population numbers 54,923. The chief imports are cotton textiles, grain, hides and skins, and tobacco, fruits and vegetables, coal, coffee and sugar. The value of all imports amounted to \$33,127,000 in 1920. The chief exports are coffee, gums, tobacco and foodstuffs generally, the value of which in 1920 aggregated \$29,765,000. The trade is largely a transshipment one, as Aden itself produces little. Its chief industries are

the manufacture of salt and cigarettes. Aden is of the greatest importance as a coaling station on the route to the Far East. It is strongly fortified. The government is administered by a Political Resident who is also Commander of the Troops. The Political Resident in 1922 was Major-General T. E. Scott.

ADRIAN COLLEGE, a Methodist Protestant co-educational institution incorporated in 1859 and located at Adrian, Mich. Statistics for 1922-23 show a faculty of 16 members, 175 students, property valued at \$400,000 and an income of \$60,000. Harlan Luther Feeman, M.S., D.D., is president.

ADVENTISTS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

ADVERTISING. It is a common view that advertising is a barometer of industry in general, and that it goes up and down with the volume of trade. It is now carried on upon so large scale as to be properly classed as itself an industry, but the record of the last few years has upset some preconceived notions as to its value as a measure of prosperity. Both newspapers and magazines received large advertising patronage during the war. Paper being scarce, publishers had all they could do to get enough to carry their advertising pages. But singularly enough after the war was ended, and the most ordinary foresight indicated reduced business all around, advertising increased in quantity, and prices stiffened rather than lowered. The newspapers and magazines of the United States carried 25 to 50 per cent more advertising in 1920 than in 1919. This surprising condition was attributed to two causes: (1) Dealers were generally overstocked and extremely anxious to dispose of their goods before the prices went lower, as they felt was the trend; (2) profit taxes were very high, and many concerns deemed it best to put much of their profits back into advertising, rather than to register them and pay tax on them. The next year's advertising record (1921) showed more surprises; newspaper advertising nearly held its own—in some instances gained; magazine advertising fell off more than a third, and 20 to 25 per cent below 1919. In 1922 newspaper advertising still held most of the gain scored in 1920, and magazine advertising recovered much of the ground lost. Advertising may be said to be again normal; but it appears that it has not followed, much less led, the course of the average business industry. The figures are full of interest to those engaged in advertising.

The following table shows the number of lines of advertising carried by leading American newspapers and magazines during the month of July in the four years 1919-22:

	1919	1920	1921	1922
109 leading newspapers totaled.....	52,000,000	77,000,000	85,000,000	76,000,000
Five leading magazines.....	145,000	173,000	118,000	122,000
Five women's magazines.....	220,000	296,000	163,000	186,000
Five class magazines.....	186,000	226,000	109,000	151,000
Five popular weeklies (four issues).....	487,000	577,000	372,000	363,000

July was selected as a dull month, showing the best averages. But the table fails to illustrate the truth in one instance. The newspapers did not score a gain through the year of 1921, but showed a slight loss, about 9 per cent as against the preceding year. The possibilities of advertising, even in hard times, are illustrated by one large advertiser, who used 992 newspapers in 1922, as against 112 the previous year, and who mailed 30,000 large colored window posters to dealers.

According to an advertising survey issued by the Curtis Publishing Company in September 1922 advertisers spent \$95,439,236 in 1921 in 72 monthly and weekly magazines, women's publications and farm journals. The same publications in 1920 had an advertising income of \$132,414,799; in 1919 it was \$97,208,791; in 1918 it was \$61,312,888; in 1917, in 77 publications, some of which have been merged with members of the present list, the advertising expenditures totaled \$57,793,628; in the same number in 1916 they were \$51,867,803; in 1915, in 76 publications, they were \$38,737,336.

Publications are listed below in the order of their total income for 1921:

Saturday Evening Post.....	\$25,404,697
Ladies' Home Journal.....	10,370,829
Literary Digest.....	7,414,518
Woman's Home Companion.....	4,421,405
Pictorial Review.....	4,020,235
American.....	3,650,803
Good Housekeeping.....	2,742,741
Country Gentleman.....	2,356,576
Delineator.....	2,310,761
McCall's.....	2,284,405
Cosmopolitan.....	1,888,014
Collier's.....	1,579,118
Vogue.....	1,568,761
Successful Farming.....	1,550,809
Farm Journal.....	1,451,845
Red Book.....	1,429,429
Popular Mechanics.....	1,007,371
People's Home Journal.....	982,495
Designer.....	906,155
System.....	852,944
Woman's World.....	845,488
Modern Priscilla.....	782,481
National Geographic.....	757,800
Life.....	736,416
Harper's Bazar.....	656,561
Review of Reviews.....	575,799
Farm and Fireside.....	572,767
Photoplay.....	559,528
Needlecraft.....	535,365
World's Work.....	518,525
Christian Herald.....	500,483
Leslie's Weekly.....	498,442
Vanity Fair.....	456,163
Atlantic Monthly.....	449,658
House and Garden.....	419,061
Physical Culture.....	417,427
Country Life.....	399,619
Hearst's International.....	392,640
Motion Picture.....	387,767
Metropolitan.....	377,782
Farm and Home.....	349,968
Scribner's.....	349,957
McClure's.....	340,743
Argosy-All Story.....	344,576
Town and Country.....	326,097
Harper's Magazine.....	322,915
American Boy.....	317,130
Hoard's Dairyman.....	314,057
Mother's Magazine.....	306,999
Popular Science.....	282,682
Sunset.....	268,896
Century.....	265,288
Youth's Companion.....	263,867
Outlook.....	249,145
Today's Housewife.....	230,252
Breeder's Gazette.....	225,308
House Beautiful.....	223,457
Field and Stream.....	214,194
Theatre.....	174,011
Independent.....	152,444

already outgrown romance and was recognized as a practical art. Great national organizations such as the Chamber of Commerce of the United States, American Bar Association, Society of Automotive Engineers, American Society of Mechanical Engineers and others, co-operated with groups including the Department of Commerce, National Advisory Committee for Aeronautics, National Aircraft Underwriters Association, Aero Club of America, the Aeronautical Chamber of Commerce and the Manufacturers Aircraft Association in impressing upon the country the need for developing aviation as a means of transport and for the national defense. In this work, they had the whole-hearted support of the federal, military and naval branches.

"The National Advisory Committee for Aeronautics realized that, before definite improvement in aircraft could be made, accurate information on existing planes should be obtained. Accordingly, during the year remarkable instruments were perfected which register fully airplane tests, without depending on the pilot's individual opinion concerning performance qualities of a new machine.

"Aerial photography has become important and practical by means of special Fairchild and Eastman equipment developed during the year. Radio communication has progressed rapidly under the experiments of the Federal bureaus and the Radio Corporation of America.

"Large and powerful motors such as the Packard and Wright with 600 horsepower, the Aeromarine U-8-73, which passed a 300-hour test, the Curtiss D-12, which clinched its claim to fame as a pursuit engine, when the planes it powered won first, second, third and fourth places in the Pulitzer Trophy Race were among the year's developments. Then there is the Lawrence radial, air-cooled motor, winner of the Curtiss Marine Trophy race at Detroit in October, a performance which established it as one of the most successful of its type on earth.

"The United States Air Mail has continued its wonderful demonstration of practical flying. Its actual operations have been confined to the transcontinental route between New York and San Francisco. Mail planes in July had completed their fourth year of flying operations, traversing 1,750,000 miles in 12 months without a fatality and carrying 49,000,000 letters. Several new planes were developed for mail carrying service. One of the many improvements is the Aeromarine wing, which adds hundreds of pounds to the carrying capacity of a mail plane. Another new wing which increased the performance of certain types of planes was developed by Lawrence Sperry who also perfected a device by which he successfully dropped the entire undercarriage of his plane, wheels and all, after taking off. He then landed on a skid, which so reduced his landing speed that he was able to alight in very small spaces. Many other devices were created to make the airplane easier and safer to operate, among them the lateral 'pressure equalizer' which Grover Loening installed on his monoplane flying yachts. The development of the reversible propeller, the supercharger and the Gallaudet geared propeller mechanisms is being carried on in the United States at various laboratories and factories. The world's altitude record (34,509 feet) made by Lieut. J. A. Ma-

cready 28 Sept. 11, and which was made possible by the supercharger developed by the Army Air Service at Mook Field, has not been surpassed. Parachutists known as aerial life preservers, have become dependable. While many civilians have contributed much to parachute development, the 19 jumps have been made by army aviators. Lt. June Capt. A. W. Stevens broke the official record by dropping 24,206 feet over McCook Field.

"On 17 April, (Efford Webster in a Loening air yacht flew with a passenger from Palm Beach, Fla., to New York between daylight and dark. His flying time was 9 hours and 56 minutes for the 1,220 miles which he covered with one stop for fuel. Another world's record was made by army pilots in September when Lieuts. Oakley Kelly and J. A. Mearns flew 2,060 miles between San Diego, Calif., and Indianapolis, Ind., without stopping. A few days previously they had made another record duration flight remaining in the air 35 hours, 18 minutes and 30 seconds, in the same plane, an Army-Fokker T-2 monoplane with liberty motor.

"The United States Naval Bureau of Aeronautics operated with the fleet and also along the coast. Naval aviators mapped and surveyed the coastline. The rapping of the Mississippi delta, completed during the year, is a notable instance of the valuable peacetime work rendered by the services, as is the forest fire patrol maintained by the Army Air Service. Eighty-seven planes equipped with radio operated over the national forests on the Pacific Coast, saving millions of dollars worth of standing timber because the aerial observers could detect, locate and report small fires before they got beyond control. Naval aviation reached a high degree of efficiency in defensive work. In September naval torpedo planes operating off the Virginia capes demonstrated the practicability of torpedo attack from the air. The number of hits scored against surface craft was a success. In August, Flying Plane No. 1, at San Diego, made an enviable record with machine guns in aerial combat. The squadron attained a maximum of 145 hits in 27 seconds.

"The lighter-than-air program has been continued with all the command of the army and navy. The rigid airship ZR-1 is now being completed. The giant hangar at Lakehurst, N. J., at the other end of the ZR-3, is being built for the new Zeppelin plant in Germany as part of the Zeppelin award. The Goodyear Tire and Rubber Company at Akron, Ohio, is building a rigid airship 300 feet long for the Army.

"The experimental rigid airship Langley was commissioned early in August. Two other ships, the Lexington and the aircraft carrier fleet. The catapault for launching the decks of battleships has been placed on all ships, which will be placed on one plane ready for instant service. The sea of ship planes is not confined to the craft, but even submarines are seen to sea with a plane aboard.

"The Army, Navy and Marine are developing aerial beacons with the aid of the American Gas Accumulator Co. The Gen-

AERONAUTICS



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1. Curtiss Wildcat racing triplane
2. Curtiss Army Plane No. 2
3. First six-passenger plane built in the United States
4. German hydro-aeroplane recently obtained by the United States Navy
5. Martin bomber
6. Fokker glider, showing Fokker making his first motorless flight

eral Electric Company and other manufacturers. The Navy has installed an AGA beacon at Hampton Roads, the Army a similar type at McCook Field where night flying is the rule instead of an exception. The Air Mail is perfecting its night-flying equipment between Chicago and Cheyenne, so that when in operation contiguous flying mail service will be possible from coast to coast.

"The Army Air Service has patrolled the Mexican border daily. Regular routes have been established throughout the country, principally between all military posts, and practically all official travel is done by plane. The Army airship C-2 made a fine cross-country flight between Langley Field, Va., and Ross Field, Calif., in a successful test to demonstrate the possibilities of airship navigation from coast to coast. Many other long flights have been made by Army fliers. Lieut. James H. Doolittle on 5 September made a one-stop flight from Jacksonville, Fla., to Coronado, Calif., 2,275 miles in 21 hours and 19 minutes.

"The Aeronautical Chamber of Commerce of America was organized last January. During the year it more than doubled its membership, showing the growth of the industry among manufacturers and operators.

"American aviation, meanwhile has attracted the interest of the people. At the First National Air Institute in Detroit in October, papers were read by representative leaders in finance, business, industry, law, insurance and the aviation industry. Their views coincided in that they endeavored to show the vast influence aviation must have in everyday affairs. At the Second National Aero Congress, following the institute, the National Aeronautic Association was organized. Its membership propose to help 'make America first in the Air.' The Association is not industrial, nor does it represent any particular group, but is representative of all citizens who are determined to foster aviation as a vitally important arm of the national defense."

Commercial Aviation.—In Europe, in addition to the numerous short airway routes, as that between Paris and London, there are now established the following long distance routes: 1. London, Amsterdam, Bremen, Hamburg, Copenhagen; 2. London, Amsterdam, Bremen, Hamburg, Copenhagen and Berlin; 3. London, Brussels, Dortmund, Berlin; 4. London, Paris, Lyons, Geneva; 5. London, Paris, Lyons, Marseilles; 6. Amsterdam, Brussels, Geneva; 7. Paris, Strasbourg, Prague, Warsaw, Vienna, Budapest, Bucharest, Constantinople; 8. London-Cologne; 9. Manchester, London, Moscow; 10. Danzig, Warsaw, Lemberg; 11. Paris-Amsterdam; 12. Prague, Strasbourg; 13. Königsberg, Moscow, this last making railway connection with other lines at Berlin. Brazil has one regular route between Rio Janiero and Porto Allegre.

During 1922 there were in the United States over 150 landing fields, and over 25 companies operating some 1,400 planes, and carrying passengers for pleasure flights. A fine illustration of one of these is the Menrosa seaplane, whose hangar is at Keyport, N. J. It has 104-foot wing spread, and is driven by two 400 horsepower Liberty engines. Passengers, sometimes to the

total of 27, are carried to 87th Street landing, New York. The Aeromarine Airways on 9 May 1922, landed a party of 12 in New York, from the seaplane *Santa Maria*, from Havana, in 17 hours, 35 minutes, with seven landings. They saved 40 hours, as compared with the rail trip. Commercial companies in the United States made 130,736 flights in 1921, covering 2,907,245 miles and carrying 122,512 passengers. In that year there were in all only 24 accidents, of which three were due to "stunt" flying, two to carelessness on the field and one to storm.

In its annual report of commercial flying filed with the Bureau of Aeronautics of the Navy, Aeromarine Airways, Inc., announced that it had carried 9,167 passengers during the year ended 1 Nov. 1922, and that it carried more than 20,000 passengers on its three divisions in the past two years without an accident.

At the Great Lakes division, where a daily service was maintained between Cleveland and Detroit, 412,854 passenger miles were flown in 574 flights and 4,388 passengers were carried. In 744 flights 2,399 passengers were carried by the Key West-Havana, Miami-Bimini and Nassau-Palm Beach division. Special flights also were made from New York to Florida during the year.

The New York division, which includes service from this city to Atlantic City, New England and sightseeing around Manhattan Island, also made a good showing. In 807 flights, during which 57,658 miles were flown, 2,380 passengers were carried.

The company announced that in January 1923 it would establish a line between San Juan and Kingston, Jamaica, connecting with Key West and Havana.

Statistics presented in the following table reveal the extent to which commercial aeronautics has developed in France:

OPERATIONS OF FRENCH AERIAL COMPANIES IN 1919, 1920 AND 1921

Items	1919	1920	1921
Number of voyages made.....	988	2,368	6,221
Number of kilometers covered.....	265,784	853,959	2,350,705
Number of passengers transported.....	588	1,721	10,336
Merchandise and baggage transported, kilos.....	6,966	48,100	166,490
Mail transported, kilos.....	397	3,925	9,481

In number of voyages, in distance covered, in passengers, freight and mail carried there has been a very large increase. Mere growth, however, does not in this case necessarily indicate healthy expansion of the industry as a business enterprise. As is well known these companies are heavily subsidized out of public funds. Whether or not—or if so, how soon—these concerns can operate upon a self-sustaining basis is by no means clear. The Royal Dutch Aerial Navigation Company also made progress. During the seven months ended 15 Nov. 1921, the lines from Amsterdam to London and from Rotterdam to Hamburg transported 632 passengers, 27,000 kilograms of goods and 1,200 kilograms of letters. In the same period of 1922, 864 passengers, 55,000 kilograms of goods and 8,000 kilograms of letters were moved, besides 2,000 kilograms of parcels.

The company intends to start a service from Amsterdam to Paris in 1923 with the latest Fokker type of airplane, carrying eight passengers and wireless installation.

One million kilometers (621,370 miles) of flying with passengers, freight, and mail were completed by the Royal Netherlands Aeroplane Company, on 22 July 1922. They report that not a single accident had occurred. This company has a daily service between Amsterdam and Paris and a twice-a-day service between Amsterdam and London. The distance over each of these routes is approximately 300 miles.

In April 1922, the British Air Ministry reported that England's air traffic had decreased. Fewer passengers and less tonnage were carried than in the two preceding summers.

From May to September, 1919, 58,132 passenger and 20.2 tons of freight were carried; from October, 1919, to March, 1920, 9,808 passengers and 25.8 tons of freight; from April to September, 1920, 32,345 passengers and 86.5 tons of freight; from October, 1920 to March, 1921, 10,103 passengers and 38 tons of freight; from October, 1920, to March, 1921, 31,853 passengers and 9 tons of freight.

During the summer of 1921 passenger traffic reached its height in August, when 9,609 persons were carried; of these, 2,021 were cross-Channel passengers, mainly residents of Great Britain and France.

Subsidies amounting to £200,000 per year, were being paid by the British government to provide a regular air service between London and Paris, will be continued for some months. A permanent scheme of subsidies is contemplated, however; it is proposed that the government shall pay to certain approved British firms operating cross-Channel air service, with British machines and engines, a subsidy equal to 25 per cent of their gross earnings and that the Air Ministry shall provide a portion of their fleet on a hire-purchase basis at less than cost price.

Germany's commercial flying program for 1922 aimed especially to develop connections with Russia and the Baltic border states. Among the most striking changes in the 1922 program was the abandoning of the air lines, Berlin-Braunschweig-Dortmund and Bremen-Muenster-Dortmund, because of the small demand for the services they offered against railway competition. From a purely business standpoint, aviation companies considered the 10 toll marks per air-kilometer flown, paid by the government for mail-carrying flights in 1921, as inadequate without the added revenue from sufficient passenger carrying. Out of 4,781 air kilometers, included in Germany's 1922 air routes, 2,268 kilometers embraced routes connecting Hamburg and Berlin with the east—that is, via Stettin, Danzig, and Koenigsberg to Kovno, Riga, and Reval. The above total does not include the air lines connecting seaside resorts—namely, the Hamburg-Westerland and the Bremen-Norderney—as these lines are pre-eminently pleasure routes that are run only from 1 July to 15 September.

The important connection between Koenigsberg and Moscow, opened on 1 May 1922, is also excluded. This is operated by a newly founded company, the German-Russian Air Transportation Company, participated in by the Russian Soviet Government and by the German Aero Union Aktien Gesellschaft. The German Aero Union is promoted jointly by the Allgemeine

Elektricitäts Gesellschaft, the Hamburg America Lines, and the Zeppelinbau Corporation. Air connections between Berlin and Moscow are made twice a week. The duration of the flight between Koenigsberg and Moscow is about one-half day, whereas it requires four and one-half days to make the journey by rail.

The South African Airways Company, Ltd., whose capital is £200,000, was organized in 1922 to inaugurate commercial aviation in South Africa. The main route is from Cape Town to Johannesburg.

Construction.—The year 1922 saw immense improvement in the number and character of the instruments used in flight, and even the list is formidable. A plane for a long distance flight must now have an oxygen supply, electrically heated suits with dynamo, etc., for both pilot and mechanic, a set of navigating instruments, a radio outfit, a thermometer, tachometer, pressure-gauge, gasoline gauge, flow meter, stabilizer, inclinometer, banking indicator, altimeter, barograph, statoscope, rate-of-climb indicator, air-speed and ground-speed indicators, and various minor aerographic instruments.

These instruments may be divided into three broad classes:—(1) Engine instruments, (2) Performance instruments, and (3) Navigation instruments.

The engine instruments, which should preferably be situated in the same part of the dashboard, comprise the revolution indicator, oil (and air) pressure gauges, gasoline depth gauges (for indicating the quantity of gasoline in each tank), radiator thermometer, and in some cases an outside air temperature thermometer. The instruments employed for performance indication comprise the air-speed indicator, the altimeter, the bubble, and the rate-of-climb meter. Navigation instruments employed by the pilot include the compass, gyroscopic turn indicator, watch, and occasionally a drift indicator of the negative lens (in the floor) or wire grid type.

The observer's instruments vary according to the type of machine and the object of the flight. They may be wireless, photographic, bombing, or navigation instruments, and it is therefore not possible to specify any standard equipment.

The most notable progress in aircraft instruments has been in connection with the development of more accurate air-speed indicators, with external correctors for air density. Altimeters in which the lag is greatly reduced, and in which correction can be made for the departure of the temperature lapse rate from the isothermal one on which the calibration is based, are now replacing the earlier types.

Much progress is being made with gyroscopic turn indicators, in which the gyro wheel is driven by the relative air stream, electrically, or by means of a Venturi tube system. This type is superior in every respect to the static-head type which it has replaced. It is an invaluable instrument for flying in fog, in clouds, or at night, and for holding a straight course, in conjunction with the compass, for navigation purposes.

Marked progress has been made with compasses; the earlier quick-period types with their inherent oscillation and turning errors, are being

replaced by slower-period types and aperiodic forms. The result has been considerable improvement in course indicating and in the behaviour of the compass during turns.

Instruments for measuring the rate of ascent and descent of an aeroplane or airship are now becoming available. The rate of leakage of pressure from an aneroid box is the basic principle of a successful type.

An outstanding recent invention is steering by wireless. In a French experiment in September a 300 horsepower plane took the air without a pilot and was manoeuvred through a small set of ivory keys in a building on the field. The plane contained a wave receiver—automatic stabilizer and servo, which commanded at once the gas, spark and steering apparatus.

Under the fuselage is an apparatus to govern landing. This is in the form of a shaft at one end, which automatically detaches with the stopping of the motor. When this end touches the earth it throws the machine into vertical and brings it to a safe landing.

On 14 November the Army Air Service of the United States announced the development of a pilotless army plane, equipped with an automatic control device said to be more accurate and dependable than a human pilot, to a point where it had made successful flights of more than 90 miles. This American automatic "pilot" is capable of being mounted in any type aeroplane.

Air Service officials characterized the invention as "the dream of engineers and inventors the world over ever since the solution of heavier-than-air flight."

It was said the invention would lead to new methods of bombing, one official asserting it would be entirely practical to load a plane with explosives that would discharge on contact with any target on land or water with great destructive effect. Other military usages, it was predicted, would be discovered as the experiments continued.

Sailplanes or Gliders.—The development of the motorless plane or glider from planes capable of sustained flights of from one to three minutes to machines capable of remaining in the air over three hours was an outstanding aeronautical achievement of 1922, recalling the pioneer days of the science. In 1920 and 1921 gliding flights were made in Germany at the Wasserkuppe, and the lessons there learned were turned to good account in the third annual contest held at the same place in 1922. The world was first startled on learning that a student named Martens had remained in the air for one hour and six minutes, during which he sailed nine times over his starting point. A few days later another student, Hentzen, made a flight of two hours only to beat this record on 24 August by remaining in the air for three hours and ten minutes. French experiments at Clermond-Ferrand the same month produced no remarkable results. On 21 October at Firle, England, M. Maneyrolle, a French airman, kept a monoplane glider in the air for three hours and twenty-one minutes, thereby setting a new endurance record for motorless flight. Glenn H. Curtiss, famous American pioneer airman,

experimented with a marine glider in the waters of Manhasset Bay in September. No attempt was made to set a new record of endurance. M. Maneyrolle's record was broken 3 Jan. 1923 by the French military aviator Thoret who set a new world record for gliding by remaining in the air for seven hours and three minutes at Biskra, Algeria. The record-breaking flight was made with an aeroplane, the propeller of which had been wedged to prevent operation of the motor. On 31 Jan. 1923 a new world's gliding record was made by the French pilot Barbot, who remained in the air 8 hours, 36 minutes and 55 seconds.

Experimentation.—There are thousands of experts, engineers, aviators and inventors, at work perfecting and improving details of aeroplanes. Much is expected from the motorless sailplanes and gliders, the signal feats of which are noted in the preceding section. Some interesting experiments were made during the year with extensible wings. The extension at will of the wings is one means by which a plane capable of a speed of 200 or 250 miles an hour can maintain itself in the air at a speed of six to 10 miles an hour. The development of the pilotless plane has been already noted. The work of the early experimentors is being gone over with the greatest care and detail. For stationary experiments, wind-tunnels are used, in which models can be suspended, and the action of air-currents at known speeds can be measured on designs of all sorts. Models are sometimes hung upside down in a wind-tunnel to note the results. Gusts of wind are introduced, and their effect observed on models of differing proportions. The angle of propeller blades and their width have been the subject of much study, and it appears that for slow speed a wider blade with greater angle is necessary to increase the thrust. The point of greatest efficiency of a propeller is about two-thirds way from the hub and one-third from the tip. Being rigid and without a hinge they cannot accomplish all that is possible with a bird's wings. It is found necessary in practice to vary their proportions according to the power with which they are to be driven and the speeds that are expected of them.

To gain sustaining power, the helicopter has been tried, with little success, until recently, when E. Berliner produced a plane of this type, which was flown at College Park, Md., showing ability to rise vertically and then proceed horizontally. Whether this will prove a commercial success is still an unsolved problem.

Various efforts were made to develop the helicopter. A helicopter invented by a German named Hanschk was exploited in Holland in July. Allied restrictions preventing the inventor from operating in Germany. Marquis Pateras Pescara, an Argentine airman, succeeded in raising himself six feet in a helicopter of his own invention in a test held near Paris in March. The French war office purchased exclusive rights to the machine. Louis Brennan, inventor of the torpedo which bears his name and also of the gyroscope, gained fresh laurels on 5 June by completing experiments with a helicopter to meet the conditions laid down by the British Air Ministry for a machine of this type. Late in

January 1923 it was announced that a helicopter, built in Dayton, Ohio, by the Russian inventor, Dr. George de Bothezat, had been put through a satisfactory flight on 18 Dec. 1922 and later had made a second flight rising four feet with two passengers.

Engines.—Engines for airplanes have steadily developed in size, and there is a tendency to return to the simple types. A row of six cylinders in line on a crankshaft, as in an automobile, has some primary advantages over all the peculiar and freak type of cylinder arrangement that have characterized the principal engines of the war period. The striking Gnome, with its cylinders all in a circle, is not much used, though both French and German manufacturers have imitated it; the setting of cylinders at the angle of a V and a W seemed a great thing to permit the use of an increased number of cylinders, but when all is said and done, to go beyond six cylinders on a crankshaft means to warp the shaft and invite greater vibration; and while it may be that all of these types will persist to some degree, yet the greater number of new engines are clinging to the old design. Engine weights have been brought very low per horse-power, yet the lightest are not necessarily the best. Among a series of high-grade engines that were tested, it is noticeable that the Liberty weighed 2 to 2.45 pounds per horsepower, and the German Benz and Austro-Daimler considerably more. A Curtiss K6 showed only 1.81 pounds per horsepower and a Rolls-Royce 1.97, and another of same make 2.68. The diameter of engine cylinders is practically limited to 6 or 7 inches, owing to the difficulty of keeping larger sizes cool. A number of 400 horsepower engines have lately been produced, and some larger, but it seems likely that somewhat less horsepower will become standard practice, and that when more power is wanted, more engines will be used. Air-cooling has not many advocates, and water-cooling will undoubtedly characterize the engines of the future. Aluminum pistons have proved satisfactory, but steel is used for most parts. The typical airplane engine of today is of six cylinders in line, water-cooled, the main shaft carrying the propeller, and a vertical shaft driving the camshaft; at the lower end of the latter is the centrifugal water-pump, and the magneto adjoining is driven by helical gears.

A new type of aeroplane engine was developed in England during 1922. It is a six-cylinder crude-oil engine which develops about 1,000 horsepower and is no heavier than the types hitherto used in aviation and burning high-grade and costly fuel. Another engine type, also developed in England during the year consists of 16 cylinders arranged in four rows of four, in the form of the letter X. It is of 1,000 horsepower. Six of this type were ordered by the British government. The weight is about three pounds per horsepower. The shaft turns 1,800 revolutions a minute.

In America the Navy Department announced important changes in the Liberty motor, which in actual use had not stood up as the perfect aircraft engine. Its many good qualities stimulated the effort to correct existing deficiencies rather than turn to a new design. To this end

the Bureau of Aeronautics tackled the problem and eliminated the defects.

PRINCIPAL AEROPLANE RACES OF 1922

Race	Pilot Winner	Plane	Motor	Time	Distance	Miles per hour	Date
Pulitzer Trophy	R. L. Maughan, U. S. A.	Curtiss H. S. Pursuit.	Curtiss 375 H. P.	H. M. S. 45.10.62	250 Km. (155.34 miles)	205.8	Detroit-12-14, Oct. 1922.
Liberty Riders' Trophy	T. J. Keating	La Fere Obs.	Liberty 400	2.00.10.74	257.74 miles	128.8	12 October 1922.
Detroit-Newell Aerial Mail	E. H. Nelson	Martin Tanager	Liberty 400	2.27.20.72	257.74 miles	103.	12 October 1922.
Wm. Mitchell Trophy	D. F. Stacey	Morse, M. B-3	Wright 300	50.25.73	200 Km., 124.274 miles	147.8	12-16 October, 1922.
On to Detroit Race	W. H. Beech	Laird Swallow	Curtiss OX-5-90	57.18. —	810 miles for 220 points	147.8	October, 1922.
Curtiss Marine Trophy	A. W. Gorton, U. S. N.	Navy T R-1	Lawrence J-1 H. P. 220	85.13.17	160	112.6	October, 1922
Detroit Country Club Trophy	H. R. Harris	Honey Moon Ex.	Liberty 440	1.54.40.35	257.74 miles	134.9	October, 1922.
Deutsch de la Meurthe Cup	Larne	Nieuport 1920-(Mod.)	Hispano 320	10.14.02	30 Km.		
Round Britain	P. L. Barnard	D. H. 46		20.41.8	300 Km.		Etampes, France, 30 Sept.
British Air Derby	J. H. James	Mars I Basuel	Napier-Lyon 450	41.27.2	200 Km.		9-10 Sept. Croydon-Glasgow and return.
				62.11.8	300 Km.		
				5.62.39			
				Actual 6.30.37			
				1.6.48.75	200 miles	177.8	

Lighter-than-air-Craft.—The many Zeppelin accidents of the past, and the continued series of

fatalities that have attended the operation of enormous sausage-shaped airships, together with their great cost, and limited possibilities of use, has checked development of this type of craft. It never would have acquired the prominence it did in aviation had it not been for the persistence of Zeppelin and his backing by Kaiser Wilhelm, for far-sighted aerial engineers long ago saw that an airship with such immense surfaces must be the victim of even a moderate windstorm, and that it always must be built far too light to permit any real rigidity and permanence. The most serious accident to such a craft in the United States was the collapse of the *Roma* at Hampton Roads on 21 Feb. 1922, with a loss of 34 lives. This dirigible had been constructed for the United States government in Italy. The explosion which destroyed the United States army airship C-2 near San Antonio on 17 October and the determination of the United States Navy and War departments to employ helium gas for their major air operations helped to revive interest in a greater government program for the extraction of this non-inflammable gas and the discovery of new supplies of helium. At the end of the year the only plant in existence was that at Fort Worth, Texas. The spherical balloons hold their own for observation purposes, county fairs and annual races. The 1922 international balloon race for the Bennett trophy was started 6 August from Geneva, Switzerland, and won by DeMuyter of Belgium, who landed in Oknitsa, Rumania, a distance of 852.53 miles after a flight lasting

25 hours and 40 minutes. Captain H. E. Honeywell, of the United States finished second, having landed in Tapio-Szecsco, Hungary, 659.28 miles from Geneva after a flight of 26 hours 30 minutes. He was awarded the duration prize. The National Balloon Race started from Milwaukee, Wis., 30 May 1922. The results as checked by the United States Coast and Geodetic Survey were: Westover and Bond landed Saint Jerome, Canada, 866.5 miles from Milwaukee; Honeywell and Wade landed Neosho, Mo., 553.4 miles and Reed and Mullenax landed at Eminence, Mo., 431 miles; Van Orman and Morton landed at Fayette, Mo., 370.6 miles. There were eight other balloons in the race.

On 29 March 1923, at Dayton, Ohio, Lieut. L. T. Maitland in an Army Curtiss machine, equipped with a Curtiss D-12 motor, flew four times over a one kilometer course at a speed of 386.17 kilometers, or approximately 240 miles an hour, thereby breaking the world's record of 234.06 miles an hour established on 15 Feb. 1923 by Sadi Lecoq, the French aviator.

American Aeroplane Markets.—The Automotive Division of the United States Department of Commerce published late in 1922 the following detailed review of the aeroplane manufacturing industry in the United States.

The demand for airplanes in the past has been chiefly for military uses; the demand in the future will be principally for peace purposes. Its big field will be as a common carrier and for mail service, although even now airplanes are being more widely used in forest patrolling,

WORLD RECORDS IN AVIATION

Recognized by International Aviation Federation to 31 Dec. 1922

CLASS		Held by	Record	Made
A. Free balloons	Duration.....	H. Kaulen.....	87 hours.....	13-17 Dec. 1913
	Distance.....	Berliner.....	3,052 kmtrs. (1,896.86 miles).....	8-10 Feb. 1914
	Altitude.....	Suring and Ber- son.....	10,800 metres (35,434.8 ft.).....	30 June 1901
B. Dirigibles...	Duration.....	Castracane and Castruccio.....	15 hours.....	25 June 1915
	Distance.....	Castracane and Castruccio.....	810 kilometres (493.31 miles).....	30 July 1913
	Altitude.....	Cohen.....	3,080 metres (10,105.5 ft.).....	18 June 1912
	Maximum speed.....	Castracane and Castruccio.....	64 kls. 800 mts (40.26 mls. per hr)	30 July 1913
C. Aeroplanes..	Duration.....	Stinson and Ber- tand.....	26 hrs. 19 min. 35 sec.....	Roosevelt Field, 30 Dec.' 21
	*.....	Kelly and Mac- cready.....	35 hrs. 18 min. 30 sec.....	5-6 Oct. 1922 at Coronado, Cal.
	Distance.....	Boussoutrot and Bernard.....	Ville Sauvage to La Marmogne..	3-4 June 1920
	Altitude.....	*Maccready.....	10,518 metres (34,509.5 feet).....	Dayton, Ohio, 28 Sept. 1921
	Speed, 100 kil.....	R. L. Maughan..	18 min. 6.78 sec. or 205.31 miles per hour.....	Detroit, Mich., 14 Oct. 1922
	200 kil.....	R. L. Maughan..	36 min. 12.17 sec. or 205.94 miles per hour.....	Detroit, Mich., 14 Oct. 1922
	1,000 kil.....	Boussoutrot and Bernard.....	Ville Sauvage to La Marmogne 10 hrs. 19 min. 46 sec.....	3-4 June 1920
	1,500 kil.....	Boussoutrot and Bernard.....	Ville Sauvage to La Marmogne 16 hrs. 42 min. 8 sec.....	3-4 June 1920
	*Straightaway.....	Gen. W. Mitchell	224.48 miles per hour.....	Detroit, Mich., 18 Oct. 1922
	Carrying useful load: Duration, 1,500 kilos	[C. T. R. Hill....	1 hour, 20 minutes.....	Cricklewood, England, 4 June 1920
	Altitude, 250 kilos.	Le Boucher.....	6,782 metres (22,251.7 feet).....	Bourget, 6 July 1921
	1,500 kilos.....	C. T. R. Hill....	4,267 metres (14,000 feet).....	4 May 1920

* Subject to recognition by International Aviation Federation.

surveying of all kinds, aerial photographing, and for sport and pleasure.

In the commercial field the greatest needs are swifter dispatch and less waste, and these are being met by the improvements in airplane construction, decreases in operating costs, and steadily increasing safety and reliability—all features that have been basic also in placing commercial flying on a sound financial basis. While freight transportation by air is still limited to articles of small bulk and high value, it will undoubtedly include heavier and bulkier commodities as the service develops. Even today the airplane is cutting into the express business of Europe, especially across the English Channel.

Although American distances require the element of speed in transportation, many of the foreign-market countries need air lines for other reasons. For example, where rail and water transportation facilities are still inadequate in regions that are fairly populous and rich in natural resources, or where the likelihood of their provision there is extremely remote, air transportation is the only recourse for the development of the country—at least in the early stages.

The Foreign Demand and the American Product.—The airplane as a means of traffic has come to stay, and its use will steadily increase both at home and abroad. American manufacturers are equipped to secure their share of the resulting foreign demand, whether of the military or the commercial type, and they can secure it by appropriate collective action. In this effort they should be aided abroad by the demonstrated success of American planes in the United States, where—in addition to numerous other air lines—the largest hydroplane service in the world has developed during the past two years, closing the 1921 season with 31 flying boats and with a record of 6,814 passengers carried over 95,020 miles without a single accident. The record of the United States Air Mail Service furnishes another example of the excellence of American planes. But the largest demand for American airplane products will come when the individual types in vogue to-day are displaced by standardized planes.

Meanwhile, the foreign demand must be developed, if American manufacturers secure a larger share of airplane business from foreign countries than they have in the past. Table 1 shows what that past participation has been, as one of the four largest airplane-producing countries of the world.

It will be noted that in 1913 the United States supplied about 3½ per cent of the total export trade (excluding Italy, for which airplane figures were not shown); in 1920, the share of the United States was about 9.7 per cent; and in 1921 it amounted to but little more than 4.1 per cent.

The rise and decline in foreign demand for American airplanes and parts since 1912, as an accompaniment of the war and its aftermath, is shown in Table 2 giving the value of airplanes exported from the United States.

Most of the large exports of planes and parts during 1915 and 1917 were shipped to England for military purposes. Airplanes shipped

TABLE 1.—Exports of airplanes and parts from the United States, Great Britain, France and Italy during the calendar years 1913, 1920 and 1921, by values.¹

COUNTRY OF ORIGIN	1913	1920	1921
United States.....	\$86,931	\$1,152,649	\$472,548
Great Britain.....	237,538	6,990,925	6,518,468
France.....	2,096,719	3,098,585	2,977,628
Italy.....	(?)	547,668	801,894
Total.....	\$2,421,188	\$11,789,827	\$10,770,538

¹ Original values have been converted at the average rate of exchange as compiled by the Federal Reserve Board; namely: For 1920, £1 = \$3.66427; 1 franc = \$0.0704; 1 lira = \$0.0497. For 1921, £1 = \$3.849056; 1 franc = \$0.0745544; 1 lira = \$0.042936.

² Not shown in export statistics.

³ Parts not included in export statistics.

TABLE 2.—Exports of airplanes and parts from the United States, 1912-1922.

CALENDAR YEARS	Airplanes			Parts, value
	Number	Value	Unit value	
1912.....	35	\$113,251	\$3,235	.....
1913.....	19	61,325	3,225	\$25,606
1914.....	40	253,499	6,337	145,997
1915.....	397	2,960,094	7,456	2,458,492
1916.....	14	113,520	8,108	3,822,620
1917.....	140	1,100,207	7,858	5,505,565
1918.....	48	607,255	12,651	14,670,269
1919.....	44	215,300	4,893	3,249,226
1920.....	65	598,274	9,204	554,375
1921.....	48	314,940	6,561	157,608
1922 (January-June).....	26	30,080	1,156	49,711
Total.....	876	\$6,367,745	\$7,269	\$30,639,469

to the Allies on government transports are not shown in statistical compilations.

Exports of airplanes and parts, exclusive of engines, during the first six months of 1922 have shown a large decrease in proportion to similar exports during the preceding years, the values for half of 1922 being only one-third of the export values for the half of 1921, and only about one-eighth of those for the half of 1920.

Exports of planes and parts from Great Britain for the first six months of the year 1922 amounted to £749,419, as compared with exports valued at £543,476 for the same period of 1921—an increase of 37 per cent.

Although the best market for American airplanes in 1913 and 1918 was in Europe, in 1919 the market turned to Latin America (excepting for 25 planes shipped to the Philippines), and has since remained there.

Foreign Markets for Airplane Parts 1913-1922.—In 1913 airplane parts exported from the United States had a value of \$25,802; in 1918, a value of \$14,670,269; in 1921, a value of but \$157,608 and in 1922 a value of only \$49,711.

England was the outstanding market for American airplane parts until 1921, when it gave

way to Canada; the latter has since maintained its lead.

AFGHANISTAN, a country of Asia, bounded on the west by Persia, on the north by Russian territory, on the east by British India, and on the south by Baluchistan. Its area is about 250,000 square miles and its population numbers about 6,500,000. The reigning Amir is Amanullah Khan, the third son of the late Emir, Habibullah Khan, who succeeded his father on the latter's assassination on 20 Feb. 1919. The government is monarchical under this hereditary prince, who exercises a power proportioned to his ability and character. The four provinces into which the country is divided are governed by a Hakkim or Governor and justice is dispensed under his jurisdiction by subordinate officials. The dominant race is the Afghan, nearly all of whom are Moslems.

The largest cities are: Kabul, the capital, population 150,000; Jalalabad, 150,000; Kandahar, 31,500, and Herat, 25,000.

Criminal cases are adjudicated by government officials, but civil cases are adjudicated by a Khazi, who follows the precepts of the Koran.

The revenues of the state are in a chaotic condition, due largely to exactions of local officials. The taxes vary according to the advantages of irrigation enjoyed. A close estimate of the total revenue accruing to the government would be about 15,000,000 rupees.

Since 1919 the subsidy formerly granted to the Emir by the British government of India has been discontinued.

The strength of the armed forces of the nation is about 100,000 men, including 20,000 cavalry and about 400 guns. The rocky fastnesses of the region permit of easy defense against an invading foe.

Agriculture is fairly well developed and there are numerous irrigation systems. There are two crops sown yearly: Wheat, barley, peas and beans are sown in the autumn and harvested in the summer; rice, millet and maize are sown late in the spring and harvested in autumn. Fruits grow in the greatest abundance and form a large part of the diet of the inhabitants. Great quantities are exported in the dried state. The famed fat-tailed sheep forms the chief meat diet. Its wool and hide are important items of export.

Copper, lead, iron and gold are found in many parts of the country, the iron especially being of excellent quality. Silks, carpets, felts and articles from the hair of goats and camels are the chief manufactures.

Much of the trade is with India which receives fruits, vegetables, grain, crude drugs, spices, cattle, hides, wool and tobacco, and sends to Afghanistan cotton goods, dyes, hardware, leather, etc. The amount of the trade with India is approximately \$16,000,000 annually, about equally divided between exports and imports.

There are no railways in the country, but there are about 200 miles of telephone lines.

The usual currency unit is the Kabul rupee, worth about 15 cents in American currency.

AFRICA. The present condition of the population, trade, commerce, industry, etc., of this continent will be found fully described

under the articles on the respective countries, Egypt, Abyssinia, South Africa, etc. (qq. v.).

AFRICAN METHODIST EPISCOPAL CHURCH. See CHURCHES IN THE UNITED STATES, STATISTICS OF.

AFRICAN SLEEPING SICKNESS. See MEDICINE AND SURGERY, ADVANCEMENT OF.

AGNES SCOTT COLLEGE, a non-sectarian educational institution for women, founded in 1889 and located at Decatur, Ga. In 1922-23 it had a faculty of 45 members, 464 students, total assets valued at \$1,752,000 and an income of \$250,000. F. H. Gaines, D.D., LL.D., is president.

AGRICULTURAL BLOC, a group of United States Senators and Representatives formed during the extra session of the 67th Congress and self-described as "a casual, voluntary, and purely informal gathering of men who sought to formulate and help enact a constructive national agricultural program . . . as an emergency measure for handling some of the legislative features of the great and most unusual agricultural emergency." The group included about 20 senators mainly from the Western and Southern States and in the House of Representatives there was at least one member from every important agricultural State. The bloc ignored party lines. It was attacked by the great industrial interests and by others on the ground that its object was class legislation. It was defended especially in the West and South as an attempt to achieve openly and above board what other interests had been doing covertly for a generation. The formation of the bloc and its activities focused public attention on the agricultural situation and many of its efforts for the betterment of American agriculturists resulted in the enactment of important agricultural legislation. See AGRICULTURE.

AGRICULTURAL CHEMICAL TECHNOLOGY AND RESEARCH. See CHEMISTRY, FEDERAL BUREAU OF.

AGRICULTURAL CREDIT ACT. See RURAL CREDITS.

AGRICULTURAL EDUCATION. Although there has been a marked agricultural depression throughout the country during the past few years, the agricultural colleges have received very liberal appropriations from the State and Federal governments. The country as a whole is rapidly reverting back to a normal basis and there has been a healthy growth during 1922 of these agricultural colleges that are supported by popular taxation. Fields of activity have been widened and much intensive and progressive work has been inaugurated. The establishment of professional courses in the land grant colleges for the training of teachers is progressing satisfactorily. Many such institutions are offering rather complete work in general psychology, educational psychology, methods of teaching and other like professional studies. Courses in methods of teaching agriculture are being opened rapidly and are becoming very popular. Unfortunately many of these courses are designed for undergraduate students only and are unavailable to resident teachers in service. About 15 of the 48 agricultural colleges report rapid advancement in

courses in professional training for teachers. Improved curricula, better morale and professional spirit, and better methods of procedure are among the points noted. There seems to be a much more receptive attitude among professional school men toward the proper and advanced training of agricultural teachers than has been in evidence heretofore. All this insures better teaching in our land grant colleges. Many of the State agricultural institutions of learning report appropriations to be expended for extension of equipment and increase of teaching efficiency. The University of Missouri reports \$1,035,000 that will be used for new buildings and equipment; the total appropriation available to the New Jersey State College and Station for various expanding purposes will be \$521,200 while the Massachusetts College of Agriculture will erect, at a cost of \$300,000 a new chemical laboratory to take the place of the old laboratory used since the opening of the institution which was recently totally destroyed by fire. The experiment station connected with the Massachusetts college now receives \$83,300 for maintenance. In the South, like increases in appropriations are found. Virginia has appropriated \$50,925 for the fiscal year ending 28 Feb. 1923 and \$52,925 for the following year. These are increases of 70 and 76 per cent over the two preceding years. South Carolina has appropriated \$25,000 for experimental work at the college and another \$25,000 to be used at the sub-stations and for co-operative experimental work. North Carolina has erected many new buildings on the college campus and has increased the efficiency of every department of agricultural work. The total appropriation in Mississippi amounts to \$165,200 which includes increases to the main and all the substations. A college has recently been established in Alaska offering courses in agriculture, mining, general science and home economics. The original grant by the Territory for this institution was \$60,000 and this has been supplemented by a Territorial appropriation of \$41,000 for buildings and equipment. This college will receive \$50,000 annually from the Federal treasury under the Morrill Act and Nelson Amendment.

Vocational Agricultural Education.—The Federal Act of 1917—known as the Smith-Hughes Act, established the system of vocational education now in use in our country. This act provides for vocational education in agriculture, home economics and the trades and industries. It also provides for the preparation of teachers of vocational subjects in co-operation with the various States. The vocational agriculture comprehended by this act is generally introduced as a branch of the regular high school curriculum. The farm interests are closely related to the school work by the field practices that are required upon the part of the students while studying the subject. These practices are such that they must function on the farm. Teachers to be employed in the vocational schools must be graduates of colleges offering four-year courses in agriculture. As these teachers will need professional pedagogic training most of the State colleges have opened departments of education to fit their students for this demand. The principles of scientific agriculture are being advanced rapidly by these

graduates who go into the vocational schools to teach and better farming is becoming the marked results of their labors. Thus the program of vocational agriculture is laying a foundation for far better business methods in this important occupation. Under Federal aid the number of schools teaching vocational agriculture has increased from 609 in 1918 to 2,175 in 1922 while the number of teachers in these vocational schools has increased from 895 to 2,290 in the same years. During that time, the number of pupils in the school increased from 15,543 to 60,236. The types of schools that have gradually evolved under this act are known as: (1) all-day schools; (2) part-time schools, and (3) evening schools. Each of these fills some local need or condition but the first, the all-day school, is by far the most numerous type. During the year 1921-22 there were 3,762 white men enrolled in teacher-training classes in the agricultural colleges of the country. Of these 2,452 were taking the regular college work and 1,310 were doing summer work; 991 men were trained and graduated for this important educational work. During this same time, the colored teacher-training institutions turned out 344 men. In every State of the Union there is at least one designated institution where teacher-training work is given for white men while there are like institutions in 17 States for educating colored agricultural teachers. After a certain designated time no funds will be available under the Federal Vocational Education Act unless 20 per cent of the teacher-training fund is expended for training teachers in agriculture. There was little attempt made to give the negroes a systematic training in agriculture while in the elementary schools until after 1916. During the first year of the Federal Vocational Education Act there were 39 departments of agriculture organized in negro schools in nine Southern States. These departments had an enrollment of 1,025 pupils. During the year 1921-22 there were 165 vocational agricultural departments in colored schools with an enrollment of 4,064. During 1921 there were 21 part-time schools for negroes with an enrollment of 460. During the school year of 1921-22 these schools increased in number to 64 with an enrollment of 1,035. Most of the colored land grant colleges now have satisfactory teacher-training courses for teachers of agriculture.

College Statistics.—During 1920-21 there were 14,997 men and 1,996 women engaged in sub-collegiate, extension and correspondence courses. The sub-collegiate courses represent those secondary institutions of education that are directly under the supervision of some college of agriculture and that are used to prepare students for the higher institutions. During this same time there were 16,414 men and 530 women doing under-graduate work and 751 men and 71 women doing advance graduate work in these higher institutions. The agricultural colleges graduated 751 men and 71 women. In the colored agricultural and mechanical colleges the total number of students doing all grades of work was given as 847.

Secondary Vocational School Statistics.—During the year 1921 there were 38,037 men and 2,726 women engaged in all-day vocational schools conducted under the Federal Vocational

Agricultural Act. In 1922 these figures for men were increased to 50,313 while those for women decreased to 2,648. During the same years the number of men in part time courses increased from 1,389 to 5,632 while the women increased in number from 61 to 310. The number of men engaged in evening class work did not vary during the two-year period.

Elementary Agricultural Education.—Several States have laws upon their statute books making the teaching of agriculture compulsory in the elementary schools but as yet these laws are indifferently enforced. However, there is a growing sentiment in favor of a better enforcement of these laws and facilities are rapidly coming into existence to make the teaching of agriculture in rural schools more feasible and more efficient. Vocational agriculture can be made especially effective in consolidated schools or in schools having two or more teachers. The need for a broader and better teaching of this subject in rural schools is becoming better understood by State superintendents of education, State supervisors of vocational agriculture and by teachers in normal schools who handle this subject. Outline courses in the teaching of agriculture are issued by several States. These courses have been written and adapted to rural conditions and rural aspirations. Most normal schools have well-balanced courses in agriculture and are doing much to meet the increasing demands made by the rural districts for teachers of this type.

Agricultural Training for Disabled Ex-Service Men.—During the year 1922-23, vocational training was given by the Rehabilitation Division of the United States Veterans' Bureau to more than 11,000 men; 2,000 of these men were pursuing regular college courses that lead to degrees in agriculture, 4,000 took what is known as the unit or two-year type which requires only an elementary education for preparation and 5,000 were pursuing practical short courses that were adapted to meet the needs of the man who had less than a grammar school education. In training these men, the Rehabilitation Bureau made use of practically every agricultural college and many of the secondary schools of agriculture in the country. Special training institutions were opened at many of the army camps, notably at Camp Sherman, Chillicothe, Ohio. Wherever this training has been instituted, an ample teaching staff has been provided and sufficient building space for classrooms, laboratories, etc., has been obtained. In many cases excellent dormitory facilities are available and frequently there are accommodations for the families of the trainees. Courses are offered at these schools in agronomy, dairying, horticulture, entomology, botany, economics, animal husbandry, arithmetic, geography and drafting. Many farms are being utilized to give the necessary field work whereby the men may secure the practical training necessary to successfully complete the agricultural job.

Foreign.—The British Government plans to utilize a 1,300-acre estate presented by Lord Lee, first Lord of the Admiralty, for a model stock-raising farm. The farm will be used to demonstrate the growth and value of improved varieties of cereals and fodder crops in connection with the intensive breeding of livestock. Ex-

periments will also be made with the improving of grasslands for rearing such stock. Headquarters buildings for the British National Institute of Agriculture have been completed at Cambridge. About 30 acres of land surrounding these buildings are used for testing purposes. The French government is studying the agricultural possibilities of French Nigeria through the work of a scientific commission. Attention has been given especially to lands lying between Bamoko and Timbuctoo. A broad survey is to be made of this region with especial attention given to the production of cotton. The West China University will inaugurate agricultural instruction very soon. This is the fourth Christian institution in that country to offer such courses, the other three being located at Peking, Canton and Nanking. The West China University is located at Chengtu and offers exceptional opportunities in a territory inhabited by a hundred million people.

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AGRICULTURAL EXPERIMENT STATIONS. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

AGRICULTURAL EXTENSION WORK. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

AGRICULTURAL LEGISLATION. See AGRICULTURE IN THE UNITED STATES.

AGRICULTURAL METEOROLOGY. See METEOROLOGY.

AGRICULTURE IN EUROPE. Early in January 1923, Alfred P. Dennis, Special Agent of the United States Department of Commerce, cabled to the department a summary of the 1922 agricultural year in Europe, in which he stated that crop results confirm the extent of the slowness in the recovery of European agriculture. The 1921 wheat crop was excellent, in both yield and quality, but the root and forest crops were severely cut by drought. The conditions were exactly reversed in 1922, for the wheat crops were exceptionally poor and the root and forest crops were favored by the wet summer and autumn, and were the best in years. The estimated grain yields of Europe, excluding Russia, for 1922, 1921 and the pre-war average are shown in the following table:

PRINCIPAL CROP YIELDS OF EUROPE, PRE-WAR AVERAGE, 1921 AND 1922.

(In millions of bushels or metric tons.)

	Amount produced		
	Pre-war average	1921	1922
Wheat..... bushels	1,279	1,222	1,009
Rye..... do.	800	759	700
Barley..... do.	603	570	579
Oats..... do.	1,728	1,500	1,500
Corn..... do.	538	404	326
Total cereals..... do.	4,948	4,455	4,114
Potatoes..... metric tons	102	82	125
Sugar beets..... do.	38	27	32

Exclusive of Russia, the European raw sugar production of 1922 is recorded at from 600,000 to 650,000 tons over last year. For the first time in eight years Germany, it was said, may have a small surplus of sugar for exportation. A marked increase over the previous year in the yields of potatoes, turnips, cabbage and other vegetables served to raise the total food production to a level not far below that of 1921, but the increases were for the most part in foods of relatively low nutritive value. Russia made a fair recovery from its agricultural plight of 1921; the national grain production rose to about 50 per cent of the pre-war yields, while the sugar crop of the 1922 season was expected to be 220,000 tons, or more than four-fold that of 1921.

Grain Import Requirements.—The grain import requirements of Europe Mr. Dennis stated, are certain to exceed those of the previous cereal year. From the beginning of the present season, 1 August to 23 December, European takings of North American wheat ranged around 180,000,000 bushels, or 12,333,000 bushels more than in the same period of 1921. The heaviest European importers in the period named were as follows: United Kingdom, 56,000,000 bushels; Italy, 41,000,000 bushels; France, 22,000,000 bushels; Netherlands, 14,000,000; and Germany, 11,000,000 bushels. The demand for North American flour kept pace with the demand for wheat, but imports of corn were disappointing, running about 8 per cent less than for the same period of the previous year. The rise in the price of corn and a more plentiful supply of cheap barley somewhat affected the corn import trade. Poland made the relatively best agricultural showing of any European country during 1922, and became self-sustaining. The Spanish farmers had a good year and the grain import trade was declining at the close of the year. Greece was severely pressed for food, with its loss of important grain producing territory, and the sudden increase in its population.

European farmers as a class, according to Mr. Dennis, are relatively well off, particularly those who put their war profits in real estate or farm improvements. The debtor class, especially in central European countries, profited by the depreciated exchange and farmers in Germany, Austria and Hungary are paying off mortgages of long standing by the simple device of selling a few head of livestock. On the other hand, farmers who put their savings in national war loans, or depended upon co-operative credit organizations for seasonal assistance, were said to be in bad straits.

The course of the war tended to divert the stream of wealth from the cities to the country in the case of France and Denmark, and farmers in both those countries are regarded as relatively prosperous. The British farmers are oppressed by the burdens of war taxation and high labor costs, whereas in Bulgaria the farmers are fairly prosperous and contented, because men who own soil work it themselves and are not concerned with labor costs. The farmers in Germany, Austria, Hungary, Yugoslavia, Rumania and Russia have been thwarted and discouraged by state interference with trade in farm products. The systems of price-fixing, grain requisitioning, and export embargoes, Mr. Dennis said, are

already crumbling, and relaxation of state interference with free movement of farm products would greatly benefit the farmers of eastern Europe.

AGRICULTURE IN THE UNITED STATES. A broad view of agriculture in this country during 1922 shows that the physical basis of prosperity is here—food in abundance and the raw material which goes into various products—but the real satisfactions of prosperity for the farmer have not been reached. It might have been a prosperous year for agriculture and for the nation but for the distorted relationship between prices received for farm products and prices paid for the things the farmer must buy. The general agricultural survey is thus vividly initiated by Secretary of Agriculture Wallace in his annual report.

Laboring under discouragements for the third consecutive year the farmer, in contrast with various other groups, has produced abundantly without cessation. The total production of the 14 principal crops in 1922 was greater than 1921 and above the 10-year average. But in spite of this great quantity of actual wealth produced, farm people, comprising one-third of the nation's population, had a greatly reduced purchasing power resulting from the decline of farm prices to a point near the pre-war level while prices of other commodities were 50 to 100 per cent above it.

Secretary Wallace diagnosed the discrepancy between farm prices and prices of other commodities as due to over-production of many farm crops, continued high freight rates, economic depression and depreciated currency in European countries, interference with the efficient functioning of necessary industries, and unnecessary high cost of distribution of some farm products. Taxes, too, have become a galling burden on the farmer. An investigation of a large number of farms in 1913 showed taxes were 9.8 per cent of the farmer's income. On the same farms last year they amounted to nearly one-third of the income.

But in spite of all these adverse conditions Secretary Wallace predicted no general breakdown of the agricultural industry. He sees in the record of the past year's production a vivid illustration of the vitality of American agriculture and of the courage and hopefulness of the American farmer, although many thousands of them have not been able to weather the storm. Most of them, however, succeeded in maintaining themselves and their hold upon the land by the exercise of the most rigid economy—economy which contributed to the difficulties of manufacturers, dealers and retailers during 1922.

The end of the year saw a gradual improvement in progress, an improvement which had placed the farmer in a better financial condition. The aggregate value of the crops in the country was about a billion and three-quarters dollars more than in 1921. The cotton country closed the year in better shape than it had been for three years; the sheep industry, especially in the range region, was out of the slough of despond at the beginning of the new year. Fattening hogs and cattle was fairly profitable as corn was low in price. Cattle raisers, however, did not do so well.

Regional Conditions in General.—In reviewing conditions by regions it is found that the corn belt experienced some revival over conditions in 1921. This was due to a considerable extent to improved livestock prices. The price of corn gradually strengthened during the year, but more important was the spread which early developed between hog and corn prices, making it possible for considerable grain to be marketed at some profit in the form of pork. Cattle prices also moved up something like \$2 a hundred pounds during the year, which proved a stimulus to feeding. Sheep and lambs likewise improved in prices.

In the wheat belt, with little diversification of products, the effect of unsettled world conditions tended to retard recovery. Wheat prices, while they appeared moderately stronger during the fall of 1922, were not high enough to bring prosperity to this section of the country. Much of the northern spring wheat territory witnessed a crop failure four years preceding the past season. During the past year the crop was much improved but the growers were obliged to sell at almost bankruptcy prices.

The cotton States have enjoyed the most marked recovery of any region, taken as a whole. This has been based, of course, on the strong upward trend of cotton prices. Farmers received from five to eight cents a pound more for cotton than in the fall of 1921 and double the prices of early 1921. The cotton belt west of the Mississippi River was hit by a severe drouth during the growing season while the eastern territory was badly ravaged by the boll weevil. These unfavorable circumstances combined to make a shortened crop.

Conditions in the dairy, hay, fruit, potato and diversified regions of the East were none too good the past year. The East was one of the last agricultural regions to feel the severity of the depression and in many respects was in the same condition during the summer of 1922 as the corn belt witnessed two years earlier. Dairy products dropped to low levels while the abundant production of apples and potatoes led to exceedingly low prices. The close of the year saw a great deal of pessimism throughout this region. The East, on the other hand, has been relatively less burdened with war-time debts and has had less inflation to contend with. Although generally discouraged at the poor market for its products the past year, the East is fundamentally in sound condition and so far has escaped the very keen distress witnessed farther west and in the South.

In the range country of the Far West the general trend during the year was toward improvement. Generally speaking, stockmen were able to meet or refinance a good share of their debts and so recovered a fair measure of financial equilibrium. The number of sheep and cattle appeared to have increased steadily. Many sections of the range, however, were handicapped by unusual drouth.

The Pacific Coast did not experience the degree of war-time inflation nor the pronounced slump which followed the price decline throughout the country to the eastward. The coast has been relatively prosperous through the entire post-war period. Producers in this section were

handicapped the past year by railroad strikes and they felt some reaction from weaker eastern markets. Fruit growers, stockmen and general farmers have fared reasonably well and expressed normal satisfaction with the outlook.

Review of Certain Major Crops.—Based on the government's final crop report of the year it was estimated that the country's crops in 1922 were worth seven and one-half billion dollars, taking as a value the 1 December farm prices. This gave the 1922 crop an increase in value of \$1,800,000,000 over the 1921 crop, reflecting increases in prices from a year ago and increased production of some farm crops. The aggregate value of the 1922 crop was about the same as that for 1916 but lower than any year since 1915, except last year. It was only a little more than half as much as the record value of 1919.

The production of cotton was the smallest in 20 years, excepting last year's small crop, but based on 1 December farm prices it was the fourth most valuable ever grown. In the final estimate the cotton crop of the year was placed at 4,767,000,000 pounds of lint, which is equivalent to nearly 10,000,000 bales of 500 pounds gross weight. While there was a large acreage of cotton, the boll weevil got in its work with extremely heavy damage and drouth in many sections materially assisted in keeping down the production. South Carolina and Georgia were the most severely affected of any of the cotton-growing States, their production being about 40 per cent of the average of the five years from 1916 to 1920.

The winter wheat crop was somewhat smaller than 1921, but the spring wheat crop was materially larger. The total wheat crop, therefore, amounted to 856,000,000 bushels, compared with the production of 814,000,000 bushels in 1921, and a somewhat greater figure than the five-year average from 1916 to 1920.

The corn crop was placed at 2,890,000,000 bushels, which was somewhat smaller than 1921 but slightly more than the five-year average. The outstanding feature of the corn crop was the increase in value of \$600,000,000 over the aggregate value of the 1921 crop. Oats with an estimated bushelage of 1,215,000,000 was considerably larger than the 1921 crop but less than the average. Barley was about an average crop although considerably larger than that of 1921.

The crop of white potatoes the past year was one of the heaviest ever produced. The final estimate was 451,000,000 bushels as compared with 361,000,000 bushels in 1921 and 373,000,000 bushels for the five-year average. Though the crop as shown was considerably above that for 1921, the aggregate value was placed at more than \$100,000,000 below that for 1921. Prices of potatoes have been very low in response to the indications of an abnormally large crop and in consequence the potato growing sections of the country have experienced particular depression.

In both production and value, the 1922 tobacco crop increased considerably over the 1921 figures, though the production was slightly under the five-year average. Final estimates placed the 1922 tobacco crop at 1,300,000,000 pounds with an estimated value of \$306,000,000 as compared with 1,000,000,000 pounds in 1921 with a value of \$213,000,000.

There was a heavy production of fruit during the past year. Apples in particular were estimated at more than twice the 1921 crop and considerably larger than the five-year average. The final estimate placed the total production of apples at 203,000,000 bushels, while the 1921 production was slightly less than 100,000,000 bushels. The value of the 1922 crop, however, was placed at \$202,000,000 as compared with \$166,000,000 for 1921, which shows the comparative low values for apples during the past year as a result of increased production. The commercial apple crop alone was about one-half larger than that in 1921.

Livestock Production and Movement.—The total value on 1 Jan. 1923 of all animals, on farms and ranges, according to final estimates, was \$5,111,256,000 as compared with \$4,799,170,000 on 1 Jan. 1922, an increase of \$312,086,000 or 6.5 per cent. On 1 Jan. 1921, the total value was \$6,051,202,000, and on 1 Jan. 1920, \$8,165,194,000. The total value estimated at the beginning of 1923, though lower than 1920 and 1921, indicates the general increase in farm prices over 1922.

In actual numbers, from 1 Jan. 1922 to 1 Jan. 1923, horses decreased 203,000; mules increased 39,000; milk cows increased 347,000; other cattle increased 373,000; sheep increased 882,000; and swine increased 5,590,000. The number of horses on farms on 1 Jan. 1923 was 18,853,000 as compared with 19,056,000, 1 Jan. 1922. Mules on farms, 1 Jan. 1923 numbered 5,506,000 as compared with 5,467,000, 1 Jan. 1922. In total value from 1 Jan. 1922 to 1 Jan. 1923, horses decreased \$29,180,000; mules decreased \$8,843,000; milk cows increased \$13,970,000; other cattle increased \$87,494,000; sheep increased \$104,394,000; and swine increased \$144,251,000.

In reviewing the number of meat animals on farms 1 Jan. 1923, milk cows total 24,429,000 as compared with 24,082,000 on the same date in 1922. The aggregate value was \$1,241,673,000 as compared with \$1,227,703,000 in 1922, although the average price per head remained practically stationary during the two years, or a little over \$50. The total number of beef cattle was 41,923,000 as compared with 41,550,000 on 1 Jan. 1922. Beef cattle values increased to \$1,076,254,000 as compared with \$988,760,000 on 1 Jan. 1922 and the 1923 value per head of \$25.67 was a fair increase over \$23.80 for 1922. The total number of all cattle was 66,352,000 on 1 Jan. 1923 as compared with 65,632,000 in 1922. It should be kept in mind that the number of domestic animals in cities and villages is not taken into account in these figures.

Figures on sheep show clearly that this class of livestock was the most profitable in 1922. The total estimated number on farms on 1 Jan. 1923 was 37,209,000 as compared with the 1922 total of 36,327,000. This shows a comparatively slight increase in number but the 1923 total value was \$278,939,000 as compared with \$174,545,000 in 1922. The sheep value per head on 1 Jan. 1923 was \$7.50 as compared with the much lower figure of \$4.80 in 1922.

The total value of swine at the beginning of 1923 showed a good increase over 1922 but this was due largely to the increase in numbers. On 1 Jan. 1923 the number of swine was estimated at 63,424,000 as compared with 57,834,000 in 1922.

The total value on 1 Jan. 1923 was \$726,699,000, while on the same date in 1922 it was \$582,448,000. The value per head increased from \$10.07 in 1922 to \$11.46 on 1 Jan. 1923.

During the first 10 months of 1922, receipts of cattle and hogs at public stockyards were comparatively heavy, whereas those of sheep were relatively light. Receipts of cattle and calves amounted to 18,965,000 head which was 15 per cent greater than similar movements in 1921 and constituted the heaviest run since 1919. Hog receipts for the 10-month period totalled 34,642,000 head, an increase of 3.5 per cent over 1921 and represented the heaviest movement to market since 1919. As might be expected, in view of the relatively small numbers estimated on farms at the beginning of the year, sheep receipts at public stockyards showed rather sharp decreases. Receipts during the first 10 months of 1922 totalled 18,560,000 head which was a decrease of slightly more than 9 per cent as compared with movements in 1921 and constituted the lightest run since 1918.

Although in the main the marketward movement of livestock during 1922 was relatively heavy, there was a compensatory movement in the form of shipments of stocker and feeder animals back to the country. Cattle on feed in 11 corn belt States on 1 December showed an apparent increase of 27 per cent over the number on feed on the corresponding date in 1921. Iowa led with an increase of 50 per cent, followed by Illinois with 35 per cent and Nebraska, Missouri and South Dakota with 25 per cent each. Shipments of stocker and feeder cattle and calves from 67 public stockyards for the four months preceding 1 December were the heaviest on record, being 2,652,000 head as compared with 1,869,000 in 1921 and 2,570,000 in 1919, which was the record year for such movements prior to 1922. It was also estimated that there were approximately 20 per cent more sheep and lambs on feed on 1 December as compared with the number at the same time in 1921.

Agricultural Legislation.—The national Congress early in the year addressed itself to the imperative need of enacting such legislation as would tide agriculture over the period of depression and place it upon a substantial national basis. Considering the financial stringency which was forcing farmers to sacrifice their crops at whatever prices they could get, Congress breathed new life into the War Finance Corporation. The Corporation itself did not function very actively until late in the summer of 1921 when Congress added greatly to its powers, authorizing it to carry financial help directly to domestic agriculture and making available practically \$1,000,000,000. The Corporation functioned actively and effectively during the entire year.

Congress practically doubled the ability of the Federal Farm Land Banks to loan on farm mortgages by providing for an enlargement of their capital stock from loans from the Treasury. This help came just at the time when there was a tremendous demand for farm mortgage loans, a demand so heavy that the Farm Land Banks could not begin to meet it. These banks were put in a position where they could loan at the rate of almost \$300,000,000 a year at an interest rate of 5½ per cent. In 1921 thousands of farmers were required to pay 7 and 8 per cent

including interest and commissions for farm mortgage loans.

One of the comparatively recent acts of Congress was the passage of the Packers and Stockyards Act. This law brings the packing houses, the stockyards, the commission merchants and other stockyard agencies under the supervision of the Secretary of Agriculture. He has authority under the law to inquire into the manner in which the business is conducted, to examine books, to subpoena witnesses and require them to testify under oath. In short he has ample authority to look into all phases of the livestock business as conducted by the packers, commission merchants and stockyards, including the authority to determine whether charges are fair and just. Under this law it will be possible to make a thorough study of the livestock business from the time the animals leave the farm until the meat reaches the city wholesaler and to correct any unfair practices at any point along the way.

Another law of a similar nature is the Grain Futures Act which brings the various exchanges under the supervision of the Secretary of Agriculture. This law gives the supervising agency authority to inquire into the manner in which grain is bought and sold, and into future contracts made upon the principal grain exchanges of the country. It does not prevent hedging or legitimate trading but it carries the power to prevent unfair manipulation and to correct improper practices by those who deal in grain futures. When this law was first passed an appeal was made to the courts and it was held unconstitutional. It was redrafted and again passed by Congress.

Recognizing the fact that farmers' co-operative associations are not only right but desirable, Congress passed a law which gives farmers the right to form such associations, and at the same time safeguards the public interest against abuse by giving the Secretary of Agriculture authority to see to it that they are not used as monopolies to unfairly enhance prices.

The law which created the Federal Reserve Board provided that in appointing members of that board the President should have due regard "to a fair representation of the different commercial, industrial and geographical divisions of the country." In order that agriculture might be justly recognized, Congress amended the act so that now it reads that in appointing members, the President shall have due regard to "a fair representation of the financial, agricultural, industrial and commercial interests."

The following is a list of the more important books on agriculture published in 1922: Bahr, Fritz, 'Commercial Floriculture'; Bailey, L. H., 'Apple-tree'; Birch, R. R., 'Hog Cholera, Its Nature and Control'; Brown, G. R., 'Melon Care and Culture Step by Step on Clay Soil'; Crawshaw, F. D., and Lehmann, E. W., 'Farm Mechanics'; Cruess, W. V., and Christy, A. W., 'Laboratory Manual of Fruit and Vegetable Products'; Davis, B. M., 'Principles of Farm Practice'; Douglass, B. W., 'Fruit-growing'; Foster, W. A. and Carter, D. G., 'Farm Buildings'; Freeman, E. M., 'Home Vegetable Garden'; Gardner, V. R., Bradford, F. C. and Hooker, H. D., 'Fundamentals of Fruit Production'; Gourley, J. H., 'Text-book of Pom-

ology'; Graton, Louis, 'Intensive Strawberry Culture'; Hedrick, U. P., 'Cyclopedia of Hardy Fruits'; Hottes, A. C., 'Little Book of Annuals'; Jackson, H. W., 'Successful Backyard Poultry Keeping'; Lamon, H. M., and Slocum, R. R., 'Ducks and Geese'; Lamon, H. M. and Lee, A. R., 'Poultry Feeds and Feeding'; Lamon, H. M. and Slocum, R. R., 'Turkey Raising'; Lyon, T. L. and Buckman, H. O., 'Nature and Properties of Soils'; McCandlish, A. C., 'Feeding of Dairy Cattle'; Majonnier, T. and Troy, H. C., 'Technical Control of Dairy Products'; Plumb, C. S., 'Study of Farm Animals'; Powers, W. L. and Teeter, T. A. H., 'Land Drainage'; Richardson, A. W., 'Poultry'; Sherlock, C. C., 'Modern Farm Hen'; Van Wagenen, Jared, 'The Cow'; Watts, R. L., 'Vegetable Growing Projects'; Burritt, M. C., 'County Agent and the Farm Bureau'; Chase, L. A., 'Rural Michigan'; Davenport, A. C., 'American Live Stock Market'; MacGarr, Llewellyn, 'Rural Community'; Myrick, Herbert, 'Rural Credits System for the United States'; Sanderson, E. D., 'Farmer and His Community'; Sherlock, C. C., 'Modern Farm Co-operative Movement'; Smith, J. G., 'Organized Produce Markets.'

Published in England: Davidson, H. C., 'Vegetable Culture'; Edmonds, C. R., 'Diseases of Animals in South Africa'; Fletcher, F. J., 'Market Nursery Work'; Kirk, Hamilton, 'Canine Distemper'; Orr, John, 'Short History of British Agriculture'; Smith, K. M., 'Insect Pests of the Horticulturist'; Wilkins, V. E., 'Agricultural Research and the Farmer'; Woolley, R. V. G., 'Tomato Cultivation'; Wright, H. J., 'Plant Pests and Parasites'; Wright, W. P., 'Practical Gardening.'

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AGRICULTURE, INTERNATIONAL INSTITUTE OF, (Rome.) The aim of the International Institute of Agriculture (Villa Umberto I., Rome) is to protect and favour agriculturists throughout the world. Sixty-three nations are united in this work of culture and of peace, which is directed by a permanent committee of delegates. A citizen of the United States, Mr. David Lubin, conceived the idea of founding such an institution and was strongly supported by H. R. M. the King of Italy and the Italian government.

A conference meeting in Rome, approved of the convention on 7 June 1905. This conference prescribes the regulations and workings of the institute, which are, likewise, approved of by the delegates of the General Assembly which convenes in Rome every two years. The last of these assemblies was held in May 1922. In accordance with the convention of 1905, the institute undertakes to study, centralize and communicate all agrarian information, as well as technical and economic matters concerning agriculture, to the various states. In certain cases, the institute may submit measures for the protection of the common interests of agriculturists and the improvement in their condition to any government. The Institute publishes various works and monographs. Among the more important are: three bulletins, two quarterly and one monthly, on agrarian statistics; 'The Inter-

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national Yearbook of Agricultural Statistics' and the 'International Yearbook of Agricultural Legislation.'

The heads of departments in 1922 were: President, H. E. Hon. Edoardo Pantano; vice-president, Louis Dop; general secretary, Prof. Carlo Dragoni; librarian, Prof. Arturo Bruttini; chief of service, general statistics, Prof. Umberto Ricci; chief of service, agricultural information and plant diseases, Dr. Jules Saulnier; chief of service, social and economic institutions, J. K. Montgomery.

AGRICULTURE, United States Department of, an executive department of the Federal government whose head is a member of the President's cabinet with the title of Secretary of Agriculture. The personnel of this department on 1 Jan. 1923 was as follows: Secretary of Agriculture, Henry C. Wallace; Assistant Secretary of Agriculture, Charles W. Pugsley; Director of Scientific Research, E. D. Ball; Weather Bureau, C. F. Marvin, chief; Bureau of Agriculture Economics, H. C. Taylor, chief; Bureau of Animal Industry, J. R. Mohler, chief; Bureau of Plant Industry, W. A. Taylor, chief; Forest Service, W. B. Greeley, chief; Bureau of Chemistry, W. G. Campbell, acting chief; Bureau of Public Roads, T. H. MacDonald, chief; Bureau of Soils, Milton Whitney, chief; Bureau of Entomology, L. O. Howard, chief; Bureau of Biological Survey, E. W. Nelson, chief; States Relations Service, A. C. True, director; Division of Publications, J. L. Cobbs, chief; Packers and Stockyards Administration, Grain Future Administration, Chester Morrill, in charge; Federal Horticultural Board, C. L. Marlatt, chairman; Insecticide and Fungicide Board, J. K. Haywood, chairman; Fixed Nitrogen Research Laboratory, F. G. Cottrell, director.

The net cost to the Federal government of the regular activities of the Department of Agriculture during the fiscal year 1922 was approximately \$34,000,000 as indicated in the following table:

Agricultural Appropriation Act, fiscal year 1922 (exclusive of funds carried therein but made available for services outside of the department)	\$30,409,643 00
Agricultural Appropriations Act, 1923, immediately available funds expended during 1922	35,982 00
Deficiency Appropriation Acts (Aug. 24, 1921, Dec. 15, 1921, and March 20, 1922)	1,627,875 00
Permanent annual appropriation for meat inspection (Act of June 30, 1906)	3,000,000 00
Protection of lands involved in Oregon and California railroad forfeiture suits (Sundry Civil Appropriation Act, 1922)	30,726 00
Increase of compensation (Legislative Act, 1922)	3,137,882 00
Printing and binding (Sundry Civil Act, 1922)	725,000 00
Allotment for fixed nitrogen research (transferred from appropriation placed at disposal of the President by the National Defense Act of June 3, 1916)	500,000 00
Total	\$39,467,108 00
Excess of unexpended balances and surplus fund, fiscal year 1922, over balances of appropriations from prior years	14,450 00
Actual expenditures from Federal funds for regular work	\$39,452,658 00
Less receipts, 1922, deposited in United States Treasury to credit of miscellaneous funds	5,209,364 81
Net cost of regular work	\$34,243,293 19

Of the total expenditure of \$39,000,000 for the regular work of the Department, approximately \$9,000,000 or 23 per cent was used for research work; \$3,000,000 or 8 per cent was used for extension activities; \$20,000,000 or 51 per cent for service and regulatory activities; and \$7,000,000 or 18 per cent for campaigns for the eradication and control of various animal and plant diseases and pests.

In addition to the \$39,452,658 used by the Department for the conduct of its investigative, regulatory and other activities, \$105,790,311.81 was expended during the fiscal year 1922 from appropriations administered by the Department other than those used for the prosecution of its regular work. These expenditures were made up as follows:

Extension work in agriculture and home economics (provided by the Smith Lever Act of May 8, 1914, and supplementary funds made available by the Agricultural Appropriation Act for the fiscal year 1922)	\$5,474,050 00
Research work of state agricultural experiment stations (provided by the Agricultural Appropriation Act for 1922 to carry out the purposes of the Hatch and Adams acts)	1,440,000 00
Federal aid road construction (provided by acts of July 11, 1916, Feb. 28, 1919, and Nov. 9, 1921)	93,319,773 05
Farmers' seed grain loans (provided by special act of March 20, 1922, and Agricultural Appropriation Act of March 3, 1921)	2,811,966 96
Payment from national forest receipts for benefit of county schools and roads	1,082,679 99
Acquisition of lands by National Forest Reservation Commission for protection of forested watersheds of navigable streams (provided by Agricultural Appropriation Act of 1922 and prior years)	839,916 37
Expenses of National Forest Reservation Commission (provided by act of March 1, 1911)	186 00
Refunds to users of national forest resources of moneys deposited by them in excess of amounts required to secure purchase price of timber, use of lands, etc.	71,086 82
Study of short-time rural credits (provided by Agricultural Appropriation Act of 1922 for use of a special congressional committee)	5,000 00
Work done by the Department of Agriculture for other departments at their request, under authority of Sec. 7, Fortifications Act of May 21, 1920	18,167 67
Payments during 1922 from balances remaining available of outstanding accounts for expenses incurred during 1921 and prior years	727,484 95
Total expenditures from Federal appropriations administered by the Department of Agriculture but not used for its regular work	\$105,790,311 81

Incident to the Department's work during the fiscal year 1922 direct receipts aggregating \$8,403,394.05 were turned into the Treasury. Fines imposed by and judgments recovered in the courts in connection with the enforcement by the Department of the regulatory acts which devolve upon it for administration and execution, amounted to \$168,769.36.

Of the total receipts of \$8,403,394.05 for the fiscal year 1922, \$5,209,364.81 (of which \$4,628,462.42 was derived from business on the national forests) was collected in connection with the regular work of the Department, and all of this amount was turned into the general fund of the Treasury; \$2,202,269.62 (of which \$1,878,188.14 was derived from business on the national forests) was available for use in connection with the regular work of the Department.

tion with the Department's regular activities; and \$991,759.62, representing reimbursement for cost of distributing surplus war materials to States for use in road construction work and repayments by farmers of seed-grain loans, was available for use in connection with projects administered by the Department, apart from its regular activities. For the fiscal year ending June 1923, the expenditures for the work conducted and administered by the Department will not materially differ from those for the fiscal year 1922.

Work of the Department of Agriculture During 1922.—The efforts of the Department of Agriculture during 1922 were directed to be of the greatest possible service in the task of restoring agriculture to a prosperous basis—to help the farmer through the period of depression and to place his business on a permanent and satisfactory foundation. Of first importance are certain fundamental changes in the reorganization of the regular activities of the Department. In the budget for the fiscal year 1924, Congress was asked to provide for a director of extension work. Under the former arrangement there was no one person charged with the responsibility of co-ordinating all of the extension work of the Department. It is the plan to bring under this directing head all of those offices which have to do entirely with extension work. These are the office of co-operative extension work in the States Relation Service, the office of motion pictures in the Division of Publications and the office of exhibits which was temporarily attached to the office of the Assistant Secretary. The plan makes unnecessary the States Relations Service, the office of the Director of Information, and the Division of Publications, and when put into effect will do away with them as such. The other offices in these divisions will be placed under the supervision of the Director of Scientific Work, the Director of Regulatory Work or within the Secretary's office proper. When the complete plan of supervision is put into operation the three general classifications of the Department's work—research, regulatory and extension—will come under a single directing head, each responsible to the Secretary.

In order to consolidate the branches of the Department doing economic research work the new Bureau of Agricultural Economics was established during the summer of 1922 after several months of preliminary study and working out of details. Included in this Bureau are the former Bureau of Markets, the Bureau of Crop Estimates, and the Office of Farm Management and Farm Economics. The Department is thus enabled to make a comprehensive study of economic questions involved in production, marketing and distribution of farm products, following every step of these processes.

Of particular interest to the women of the country was the announcement made by the Secretary of Agriculture during the summer of the past year to the effect that the scientific work of the Department as it pertains to home economics was to be greatly strengthened. It is the plan of the Secretary to take the home economics work as it has been conducted under the States Relations Service, co-ordinate with it the

related activities, in the Department and head it up in a new Bureau of Home Economics. This new bureau would rank in importance with the other bureaus in the Department and be in charge of a woman, scientifically trained and with a clear knowledge of the problems facing the women on farms and in the cities.

With the desire to be of the largest possible service in serving agriculture, comprehensive studies of the conditions which influence the profitable production of various crops are made possible through the establishment of commodity councils during 1922. These councils are composed of representatives of the various bureaus and suborganizations of the Department which have anything to do with the crop being studied.

The first of these—the Cotton Council—will serve as an example. Meetings of this council are attended by the people who understand the soils of the cotton belt, by those who have made a study of varieties as adapted to certain soils, by the experts in cultural methods, by the entomologists who understand injurious insects, their habits and methods of combating them, by specialists who understand grading and marketing methods and the conditions which influence demand both at home and abroad, and by many others who have information needed to bring about the most economical production and marketing of cotton.

It is expected that out of the Cotton Council will come certain definite Department policies with regard to this crop. The same general policy is being followed with regard to the other agricultural crops so that the Department might co-ordinate its views and present a solid front.

Gratifying progress was made during the past year in the eradication of certain plant and animal diseases. Extensive surveys show that cattle tuberculosis is present in only about 1 per cent of the cattle in 42 per cent of the areas of the United States, and that in a large additional area it does not exceed 3 per cent. The remaining area is much more seriously affected but the evidence at hand indicates that this costly disease will finally yield to the scientific methods now employed.

The efforts to wipe out some plant diseases by exterminating the intermediate host met with encouragement during the year's work of the Department. The warfare against the black-stem rust of wheat in the Northwest and against the white-pine blister rust in the forests are cases in point. The part played by the barberry in the transmission of the wheat-stem rust is now generally recognized and scientists, extension workers, farmers and people and communities interested in the wheat trade, are co-operating in an extensive campaign to eradicate the barberry. In a farm to farm survey to eradicate the barberry which has been in steady progress during the past three summers, 447 counties have been covered by squads of fieldmen. It is estimated that it will be necessary to survey about 800 counties in all. Although the magnitude of this task was found greater than expected it is believed that with continued appropriations and co-operation on the part of interested parties the campaign can be carried to a successful conclusion.

The white-pine blister rust is spread some-

what after the manner of the rust of wheat, the intermediate host being the currant and gooseberry bushes. It is found in the New England forests and points in the Northwestern forests. Through quarantine and other methods of control which have been successful in New England it is hoped to check the spread of the disease.

Similar to the warfare against plant and animal diseases and insect pests is the struggle to control or eradicate predatory animals and rodent pests. The annual loss to agriculture from injurious rodents has been estimated to exceed \$500,000,000. This has been materially reduced through the campaigns which have destroyed most of the rodents on almost 100,000,000 acres of public and private lands.

The warfare against insect pests destructive to American crops grows in intensity. The past year has witnessed successful inroads made on the ravages of these pests. During the year the boll weevil has caused unusual damage to the cotton crop. The campaign against this pest has been waged with unremitting vigor and each year some gains are made, notwithstanding the increased damage being done. The results of the lime-arsenate dust treatment against the boll weevil give increasing assurance that where this method of control is properly applied it will be most helpful. The method is still expensive, however, and the cost has not been reduced to a point where it can profitably be used on land which grows less than one-half bale of cotton per acre a year.

The fight against the pink bollworm, which is regarded as an even more serious pest than the boll weevil, has given the Department encouragement. The Japanese beetle has developed into a serious pest but through a Federal quarantine the Department is attempting to hold it in check. A hopeful development in the fight against the European corn borer is the discovery of what seems to be a rather effective parasite of the insect. No new outbreak of the corn borer was reported during the past year.

Plans were made during the year to greatly improve and broaden the statistical work of the Department, especially as it relates to crop and livestock production. A committee of experienced statisticians of national standing was called in and asked to consider carefully the prevailing statistical methods and make recommendations. This committee spent some time in Washington and made recommendations of value, which are being adopted as rapidly as possible.

The necessity for establishing grades and standards for farm products of all kinds becomes increasingly evident. Clearly defined and generally accepted grades not only prevent innumerable irritations, annoyances and abuses, but help the farmer produce to better purpose and with fuller understanding of market needs. In the case of many farm products acceptable and fairly well understood grades already have been established.

The standards for grade and color of American Upland cotton and for American-Egyptian cotton were revised during the year and a change was made in the grade names by the introduction of the numerical system to supple-

ment the present grade names. Much progress was made in the wool standardization work. More than 500 sets of the tentative wool grades were prepared and delivered to those interested. Up to the close of the year, grades had been formulated and recommended for 14 of the more important fruits and vegetables. Tentative standards were prepared for eggs and attention given to the preparation of standards for live and dressed poultry. Tentative hay grades have been formulated for timothy, clover, timothy and clover mixed, mixed grass and timothy, and grass mixed hay.

During the past year there has been an unprecedented increase in the number of applications received from warehousemen who operate on a large scale under the United States Warehouse Act. At the beginning of the fiscal year 1921 there were licensed 238 cotton warehouses, having a combined capacity of approximately 430,000 bales. By the close of 1922 this number had increased to 268 warehouses having a combined capacity of 1,210,000 bales. The number of grain warehouses licensed under the act increased from 56 having a capacity of 2,110,000 bushels to 263, with a capacity of 14,441,000 bushels. The number of wool warehouses increased from five with a combined capacity of 24,375,000 pounds to 18 with a capacity of about 27,500,000 pounds. During the year 14 warehouses controlling space to accommodate 68,395,000 pounds of tobacco were also licensed. Prior to 1922 no tobacco warehouses were licensed. A marked interest developed also among warehousemen in sections in which no interest had been shown prior to this year.

Ten thousand two hundred and forty-seven miles of road projects were brought to completion during the year through Federal aid to the States. Prior to the fiscal year 1922, 7,469 miles had been completed. This brings the total completed up to the end of the year to 17,716 miles. At the close of the year the projects under construction, amounting to approximately 14,500 miles, were estimated to be about 56 per cent complete.

Agricultural Extension Work.—The extension work of the Department was reorganized during the year, the two offices through which this work had previously been administered being combined into a single office. This was done in the interest of simplicity of administration and unity of program and effort. An attempt was also made during the year to further define and clarify the function of the county agent, especially with regard to marketing problems. The Secretary of Agriculture ruled that it is as much the business of extension agents to aid farmers in an educational way in such problems as it is to advise them on matters of production. The fact, however, was emphasized that the extension agent is essentially a public official and therefore may engage with propriety only in business of a public nature.

About 4,000 persons were employed in the work. Approximately 2,100 of the 3,061 counties in the United States are now organized for extension work and it is estimated that 2,500,000 farms and farm homes were reached and influenced to adopt better methods in the various enterprises of the farm and farm home.

The county agent work dealt with various phases of soil, crop and live stock improvement; control of plant diseases and insect and rodent pests; farm management, and marketing. The home demonstration work dealt with such subjects as food and nutrition; clothing; home management; equipment, and beautification. Nearly 500,000 farm boys and girls were enrolled in various forms of club work. Much progress is reported in improving methods of organizing and conducting extension work.

Experiment Stations.—Agricultural experiment stations supported by Federal and State funds are in operation in every State of the Union. In addition to these State experiment stations, experiment stations, supported entirely by Federal funds, are maintained under the direct supervision of the Department of Agriculture in Alaska, Hawaii, Porto Rico, Guam and the Virgin Islands. The latter stations have made noteworthy progress in introducing improved farming methods and in developing a more diversified, evenly balanced and self-sustaining agriculture in these territories.

The total number of persons employed by the State experiment stations increased from approximately 1,700 in 1920-21 to 1,750 in 1921-22. The number of persons employed by the Alaska and insular stations was about 30.

A recent survey of the research work of the experiment stations shows that they are engaged on more than 4,850 projects, covering almost every phase of the diversified agriculture of the United States and its insular possessions. About one-third of the projects deal with field crops, soils and fertilizers; one-sixth with botanical and horticultural subjects; and one-eighth with investigations in animal husbandry, dairying and related subjects; the rest being of a miscellaneous character, including investigations in rural engineering, economics and various other subjects. In general the past year was especially characterized by active development of the work of the stations to meet the varied needs of the agriculture of the country.

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AIRCRAFT. See AERONAUTICS.

AIRCRAFT CARRIERS. Ships for the carrying of aircraft are still in the experimental stage although great strides have been made since the close of the World War with this type of vessel. The admiralties of the world have devoted a large share of their attention to the development of vessels of this kind and at the Washington Conference on the Limitation of Armaments great prominence was given to the ratio of aircraft carriers. It was there recognized that an important stage had been reached in the history of naval architecture and that the decisions embodied in the final treaty implied that the carrier had developed from the stage of an improvised auxiliary vessel to a definite type of regular war vessel. This important type of vessel was called into existence by the rapid technical development of the aeroplane for war purposes. The value of the aeroplane for scouting, fire control, etc., led to a demand for a kind of ship to act as a carrier for numerous fighting and scouting planes and with a speed

sufficient to enable it to accompany the fleet in action. The urgency of the war period necessitated the adaptation of vessels already in existence to this purpose. In 1922, four years after the Armistice, it remained to be determined whether the aircraft carrier generically should be of one standard type, or of three types, each adapted to a special purpose. The naval architects of the world are grappling with many difficulties that lie between the adapted types and the tentative types and the evolved efficient types that the tacticians demand. In 1919 the British post-war naval organization provided for a flying squadron of not fewer than six carriers with the Atlantic Fleet. Up to the end of 1922, however, at different times the *Furious*, *Eagle* and *Argus* have at one time or another been in commission with the Atlantic Fleet, but the full squadron has not been brought into existence. At the beginning of 1923 the British and Japanese navies were the only ones constructing vessels definitely designed as aircraft carriers. The British vessel is the *Hermes*, the published details of which are: Length, 548 feet; breadth, 70 feet; displacement, 10,950 tons; speed, 25 knots; fuel capacity, 2,000 tons of oil; armament, 10 5.5-inch guns and 4 4-inch a. a. guns. The hull has a straight stern and a wide flare at the bows, so as to ensure as dry a deck as possible for the alighting aircraft. The Japanese vessel is the *Hosho*, which has a displacement of 9,000 tons, a speed of 21 knots and four 4.7-inch and two a. a. guns. Her top deck is flush from bow to stern. The masts and charthouse telescope into the hull and the smoke escapes are carried aft horizontally. A large elevator carries the assembled aeroplane from the "hangars" on the lower decks to the flying-off deck. The United States Navy has the *Langley* (the ex-*Jupiter*), a converted collier, so fitted that the smoke escapes are adapted to turn upward or downward at the point of discharge. When the stacks are turned downward the smoke is passed through a water spray. The *Langley* is fitted with catapult starting devices as well as braking gear for stopping machines landing on the deck. The starting gear is becoming of less importance as the length of the flying-off decks increase. On the other hand braking gear has been a vital necessity from the beginning of the development of the carriers and is still of importance. An early device consisted of wires stretched athwartship, with sandbags attached to their ends. Trailing hooks beneath the aeroplane caught the wires and the load dragged it back until the machine was brought to rest. The device was primitive and full of disadvantages. The problem proved to be highly complex on account of the danger of putting too great a stress on the fabric of the aeroplane; also on account of the necessity of preventing the machine from rolling over the side or from being blown over or blown astern as it lost speed. Moreover, there arose the necessity for a gear that would operate immediately upon a second machine landing behind the first. The nature of the gear in the various navies is more or less secret, but the gear used by the American Bureau of Aeronautics in its experiments for a suitable braking gear for the *Langley* is described as follows: On revolving

platform are stretched fore and aft wires six inches apart and about nine inches above the platform. These wires are led up over a ramp on one edge of the platform and extend over the other edge where they go over another ramp. Under these wires are stretched athwartship wires to the ends of which are secured sandbags. To the axle of the aeroplane are attached a row of hooks projecting downward. A trailing hook is secured to the under carriage and two other hooks to the tail skid. In operation the aeroplane lands on the flying field and rolls up over the first ramp, it then drops down upon the wires, the wheels rolling between the fore and aft wires. The hooks from the axle engage these fore and aft wires and force the aeroplane to move directly forward into the wind without swerving. The trailing hook drops between these wires and picks up one or more of the athwartship wires. The sandbags on the ends of these immediately exert a drag on the aeroplane which brings it slowly to rest. As the tail drops, its hooks on the skid engage the fore and aft wires and prevent the plane from going over on its nose. A second aircraft carrier of the United States Navy is the *Wright*. This vessel is fitted aft with a balloon well 100 feet long, 40 feet wide and 30 feet deep, with a second well for the stowage of a smaller balloon. The *Wright* carries a plant for the generation of hydrogen gas and the wells are protected from the weather by sectional hatches which can be shifted into position by a trolley running from the deckhouse to the stern. Forward, there is a large machine shop and amidships are an aerological laboratory and a photographic department. There is of course hangar space for several aeroplanes. The *Wright* carries only four 5-inch guns. The question still to be answered fully by naval architects at the end of the year was the suitable size of the aircraft carrier. Both the United States and Japan converted two each of their scrapped cruisers into carriers, constituting thus four great aerodromes of 33,000 tons each and each carrying about 125 aeroplanes. The Washington Treaty limited the tonnage total of aircraft carriers in the navies of the Great Powers. The United States and Great Britain may only build up to a total of 135,000 tons and Japan to a total of 81,000 tons. The size of the British *Hermes*, a craft especially designed for the carriage of aeroplanes, is the first answer to the question of size, but by no means settles this question definitely.

AKRON, Municipal University of, a non-sectarian, coeducational institution located at Akron, Ohio. It was founded in 1870 as Buchtel College of Liberal Arts, and in 1913 the name was changed to Municipal University of Akron. In 1922-23 it had a faculty of 55 members, 813 students, property valued at \$735,000 and an income of \$193,570. Parke Rexford Kolbe, Ph.D., is president.

ALABAMA, one of the Southern States of the Union situated on the Gulf of Mexico between Florida and Mississippi. The State has a gross area of 51,998 square miles, of which 51,279 represent land surface. The geographic centre of the State is in Chilton County, 12 miles

southwest of Clanton. The inhabitants of the State numbered 2,348,174 in 1920, compared with 2,138,093 in 1910 and 1,828,697 in 1900. Alabama ranked 18th among the States in total population in 1920. It has 45.8 inhabitants to the square mile. Of the entire population in 1920, 1,447,032 were white and 900,652 were negro, 85 Asiatics and 405 Indians. The foreign born numbered 17,662, of whom 2,427 were Germans, 1,665 English, 1,291 Irish and 454 Scottish. The rate of illiteracy in 1920 was 16.1 per cent of the total population; being 6.3 per cent among native whites and 31.3 per cent among the negro inhabitants. Montgomery, the capital, has a population of 43,464. Other chief cities are: Birmingham (178,806); Mobile (60,777); Bessemer (18,674); Anniston (17,734), and Selma (15,589).

Education.—In 1922 there were 367,206 pupils in the public schools of the State and 12,558 teachers. There are seven public normal schools with 2,402 students. For higher education there are several institutions, the larger of which are: the University of Alabama with 135 professors and 4,029 students; the Alabama Polytechnic Institute, with 114 professors and 1,425 students; the Alabama Woman's College, with 35 professors and 402 students; and the Tuskegee Normal and Industrial Institute for colored students, with 231 professors and about 2,000 students.

Finance.—The State revenue is derived from property taxes of all kinds, the assessment being made at 60 per cent of the cash value for State and county taxes. Occupation taxes also furnish some revenue. The assessed value of the real property in the State in 1922 was \$952,602,224. The following table shows the condition of the State treasury to the beginning of the current fiscal year:

Balance on hand, 1 Oct. 1920...	\$178,560 21
Receipts during fiscal year.....	13,430,728 63
Total	\$13,609,288.84
Disbursements during last fiscal year	\$12,830,733.03
Balance at beginning of current fiscal year	\$624,639 67

The bonded debt on the same date amounted to \$8,557,000 and the floating debt to \$522,302.73.

Agriculture.—The products of the State are still largely agricultural although mineral industries have assumed prime importance in the last decade. Alabama is one of the great cotton States and produces about one-fourteenth of the cotton of the country. The yield of cotton in 1922 was 835,000 bales as against 580,000 in 1921 and 663,000 in 1920. Other principal crops are Indian corn, wheat, oats, potatoes, hay and vegetables. The yield of these in 1922 were as follows: 3,840,000 bushels potatoes; 13,490,000 bushels sweet potatoes; 760,000 tons hay; 5,540,000 bushels oats; 218,000 bushels wheat; 50,932,000 bushels Indian corn. In 1922 the value of all farm animals in the State was estimated at \$72,497,000. There were in the State 130,000 horses, 299,000 mules, 506,000 milk cows, 515,000 other cattle, 220,000 brood sows, 1,087,000 other hogs, 83,000 sheep and 6,027,000 chickens.

Manufactures.—The last census of United States manufactures places the number of manufacturing establishments in Alabama at 3,654, employing 120,889 persons, of whom 3,914 were proprietors or firm members, 9,816 were salaried employees and 107,159 were wage earners. These establishments used 628,376 primary horsepower, were capitalized at \$455,592,733. In the year named there were paid in salaries and wages \$117,633,205 and \$2,177,015 for contract work. Rent and taxes accounted for \$10,289,027. Materials cost \$300,664,290. The value of the manufactured products was \$492,730,895, thus making \$192,066,605 the value added by manufacture.

Iron and steel manufacturing is the second industry of the State, being surpassed by agriculture. Lumber and timber products form the third industry of importance. The chief woods supplying lumber are yellow pine, oak, gum, maple, ash, hickory, cypress and tupelo. Nearly all the external commerce of the State passes through the port of Mobile.

The railroad mileage is 5,378. River navigation is also important, the Tombigbee and Warrior rivers being navigable for 400 miles. At Muscle Shoals on the Tennessee is a large nitrate fixation plant constructed by the Federal Government during the World War but not to the point of production. Efforts were made by Henry Ford to secure the plant for the making of nitrates and the development of waterpower.

Government.—The Legislature consists of a Senate of 35 members and lower Chamber of 106 members; members of both houses are elected for four years and the legislature meets quadrennially.

The Governor in 1922 was Hon. Thomas E. Kilby, whose term expired 19 Jan. 1923, when he was succeeded by the Hon. W. W. Brandon. The members of the Supreme Court in 1922 were: Chief justice, John C. Anderson; associate justices, Thomas C. McClellan, A. D. Sayre, Ormond Somerville, Lucien D. Gardner, William H. Thomas and B. M. Miller. Other State officers in 1922 were Lieutenant-Governor, Nathan L. Miller; Secretary of State, William P. Cobb; Attorney-General, Harwell Davis; Treasurer, Robert L. Bradley; Auditor, H. F. Lee; Superintendent of Education, John W. Abercrombie.

Legal holidays in the State are: Sundays; 1 January; 19 January (Robert E. Lee's Birthday); 22 February (Washington's Birthday); Mardi Gras; Shrove Tuesday (movable according to time of Easter); 13 April (Thomas Jefferson's birthday); 26 April (Confederate Memorial Day); 3 June (Jefferson Davis' Birthday); 4 July (Independence Day); first Monday in September (Labor Day); second Thursday in October (Fraternal Day); 11 November (Armistice Day); Thanksgiving Day; 25 December (Christmas Day).

ALABAMA POLYTECHNIC INSTITUTE, a State co-educational institution, founded in 1872 and located at Auburn, Ala. In 1922-23 it had a faculty of 114 members, 1,425 students, property valued at \$948,375, and an income for teaching of \$299,217.09. Spright Dowell, LL.D., is president.

ALABAMA, University of, a State co-educational institution founded in 1831 and located at University, Ala. In 1922-23 it had a faculty of 135 members, 4,029 students, (including 2,000 in summer school), property valued at \$1,500,000 and an income of \$450,000. George H. Denny, LL.D., is president.

ALABAMA, Woman's College of, an educational institution under the patronage of the Methodist-Episcopal Church, South, founded in 1909 and located at Montgomery, Ala. In 1922-23 it had a faculty of 35 members, 402 students, property valued at \$500,000 and an income of \$120,000. Walter D. Agnew, is president.

ALASKA. The Territory of Alaska made appreciable progress during the year 1922. In business and industrial activity it approached the pre-war basis. Owing to a successful fishing season and renewed mining operations its production of material wealth showed a substantial growth compared with immediately preceding years. The larger gains were recorded the latter half of the calendar year and gave abundant promise of further prosperity in 1923.

The following table shows the value of the merchandise shipped to the United States from Alaska in 1922, as compared with the value of that shipped in 1921:

	VALUE OF MERCHANDISE SHIPPED TO THE UNITED STATES FROM ALASKA.	
	In 1921 Dollars	In 1922 Dollars
Fresh halibut and all other except salmon.....	576,660	446,369
Fish, dried, etc.....	456,993	130,378
Fish, pickled and all other.....	94,617	6,390
Salmon, canned.....	19,559,628	29,487,626
Salmon, all other.....	1,141,972	1,395,267
Herring, Scotch cure and salt (not separately specified in 1921).....		2,402,914
Herring, canned.....	887	8
Clams, canned.....	11,348	180,873
Fish fertilizer.....	9,045	157,578
Shrimps.....	123,310	144,471
Fish and whale oils.....	32,256	292,140
All other fish products.....	922,466	76,779
Total fish.....	22,929,182	34,720,793
Copper ore.....	7,974,270	9,833,444
Furs.....	3,300,022	3,561,291
Gypsum.....	112,680	84,230
Lead ore.....	61,621	36,120
Lead bullion.....	1,733	
Marble.....	70,880	152,046
Palladium.....	8,295	
Tin ore.....		4,650
Platinum.....	1,930	
Lumber.....	6,897	61,930
Reindeer meat.....	18,534	24,600
All other Alaska merchandise.....	73,086	117,428
Total Alaska merchandise.....	34,559,130	48,596,532
U. S. goods returned.....	1,796,782	1,598,110
Foreign merchandise.....	561,012	888,353
Total merchandise.....	36,916,924	51,082,995
Gold.....	6,543,430	6,660,978
Silver.....	806,712	770,897
Grand total.....	44,267,066	58,514,870

Exports to the United States reached a total of \$58,514,870, an increase of \$14,247,804 over the aggregate for 1921. The major volume of business was in fish and fish products, \$34,720,793, a growth of \$12,000,000. Shipments of copper, gold, silver, lead and tin reached a valuation of \$17,306,089, an increase of \$2,000,000.

Marble of the value of \$152,046 was exported as compared with \$70,880 in 1921. Reindeer meat shipped to the States for consumption yielded \$24,600, a small growth, as this industry is not yet commercialized. Lumber exports, chiefly to foreign ports, brought \$61,930, as against \$6,897 in 1921, thus showing that the vast forests have barely been touched. Fur shipments were valued at \$3,561,291, an increase of \$261,269 compared with the previous year.

Imports to the Territory of all kinds approximated \$30,000,000, exceeding those of the preceding year by \$8,000,000.

Tourists to the number of 5,537 visited Alaska, an increase of 2,095 over the number in 1921.

A gradual return to more normal economic conditions quickened recovery from depression following the World War and gave a general impetus to business and industry. Interest in the Northland was awakened throughout the country and a steady growth of population is in prospect.

The Territory has about 60,000 permanent inhabitants, of whom nearly one-half are native-born Indians and Esquimaux. The larger communities are along the southeastern and southwestern coasts and Cook's Inlet.

Juneau, the capital, in Gastineau Channel, has a varying population of 3,000 or thereabout, and other more important centres are Ketchikan, the first port of entry, after crossing Dixon's Entrance; Sitka, the former capital, on Baranoff Island; Wrangell, Petersburg and Skagway, the latter a terminus of the White Pass Railroad and gateway to the Yukon—all in Southeastern Alaska. The average tourist of the scenic Inside Passage sees these communities on its picturesque shores, but if he proceeds no farther he cannot grasp the magnitude or comprehend the greatness of Alaska as a whole.

Westward, across the Gulf of Alaska, in Prince William Sound, is Cordova, gateway to the Copper River Valley and terminus of the Copper River and Northwestern Railroad, built by private enterprise at a cost of \$20,000,000, extending 191 miles past Childs and Miles glaciers to the famous Kennicott Copper Mines. This railroad traverses a picturesque glacial and mountainous country, sparsely populated, and its business is limited largely to the transportation of ore to tidewater. At Chitina, 130 miles inland by rail, connection is made with a branch of the interior highway which leads by a chain of lakes and over beautiful slopes, with a view of smoking Mount Wrangell in the distance, affording a wonderful automobile trip. Cordova is a thriving centre of 1,000 people.

Valdez, on the bay of that name, reached through Prince William Sound, is the next town beyond and the starting point of the interior highway, called the Richardson Trail, which winds through Keystone Canyon and over Thompson Pass and the Alaskan Range to Fairbanks, the most important town in the interior, a distance of 372 miles. This highway, the nucleus of the road-building system, is kept in excellent condition and is traveled by automobile in summer and dog team in winter.

Beyond Valdez, a short day's journey by water, is Seward, on Resurrection Bay, the

southern terminus of the government railroad. Strategically situated, in closest proximity to the Alaska Peninsula and Kodiak and Aleutian Islands, and the gateway to the great interior, Seward is naturally an important centre of activity. Private capital years ago here projected and began building the Alaska Northern Railroad, but the enterprise failed and the abandoned line was taken over and became a part of the government railroad project inaugurated in 1914.

Government Railroad.—Officially designated The Alaska Railroad, extending from Seward through the Kenai Mountains and along Turnagain Arm to the new town of Anchorage, on Cook Inlet, base of construction and operation, and thence through the Matanuska and Susitna valleys and over the Broad Pass, of the Alaska Range, to Tanana, and on through the rich Tanana Valley to Fairbanks, the northern terminus—a distance of 467 miles—the government railroad penetrates the very heart of Alaska and is the outstanding achievement in the opening and development of the Northern domain. Branch lines to the Matanuska coal fields, near Anchorage, and to Chatanika, beyond Fairbanks, increase the total mileage to 540, not including spurs. Its cost to date is \$56,000,000, the outlay having been increased by abnormal conditions created by the World War, during which period construction work was wholly or partially suspended for a time because of inability to secure material and labor. Nevertheless, the expense per mile compares favorably with that of private enterprises of like character confronted with similar natural difficulties and the gigantic work throughout has been notably free of even a hint of scandal or graft. Expert opinion pronounces it one of the best built railroads in the world. Originally the Alaska Engineering Commission, to which, under the Interior Department, the colossal project was entrusted, had three members and its work was divided, but the successful consummation of the undertaking was in the hands of Col. Frederick Mears, United States Army, who had previously had a large part in the construction of the Panama Railroad and who, during the suspension of the work in Alaska, served overseas as general manager of the American Railroad Department in France.

Final construction work on The Alaska Railroad proceeded uninterruptedly and the close of the year witnessed the virtual completion of the 700-foot, single-span bridge over the Tanana River at Nenana, one of the largest of its type in the world. The completion of this bridge, which was expedited by weather conditions, will be followed at once by the conversion of the line from Tanana to Fairbanks from narrow to standard gauge and by the early spring of 1923 through trains will be operated the whole length of the railroad on probably tri-weekly schedule. During the year a twice-weekly service was maintained, with transfer by ferry at Nenana, and the freight and passenger traffic exceeded the most sanguine estimates. For 1921, with the railroad in partial operation, the revenues approximated \$480,000 or \$40,000 per month. For 1922 the combined revenues, or gross passenger and freight receipts, reached \$573,426.75. The railroad carried 36,665 passengers and 40,690

tons of freight. In its preliminary stages it is justifying itself and confirming the wisdom of Congress. A broad policy of development, with a definite colonization plan, was intended to be effective concurrently with the building of the railroad, but the World War estopped consideration of plans to that end, and needed legislation to provide such a general policy has since been deferred. Nevertheless, without the contributory aid of co-ordinated and concerted effort to encourage settlement and industry, the railroad is proving of incalculable benefit to Alaska in lowering freight rates, reducing the cost of living and solving general transportation problems. No greater difficulties of operation have been encountered in winter than are commonly met and overcome by overland trains in the States.

Besides The Alaska Railroad and the Copper River and Northwestern, the White Pass, a foreign corporation, has 20 miles of railroad in Alaskan territory, from Skagway, at the head of Lynn Canal, to the Canadian boundary line at the Summit. Its trains are operated in conjunction with the Canadian steamships and make strong appeal to tourist travel.

Steamer service on the Yukon, below Dawson, has been greatly curtailed since the operation of The Alaska Railroad and during the year this entailed serious hardship to communities along the great river. The *General Jacobs* and *General Davis*, army boats, heretofore operating from Fort Gibbon (Tanana), now abandoned, have been transferred to the Alaska Engineering Commission, and it is proposed, with the assent of Congress, to operate them in conjunction with The Alaska Railroad, as it is deemed of the utmost importance to provide freight and passenger facilities on the Yukon and its tributaries during the navigable season.

Road-building.—Roads and trails, all through the Territory, are necessarily required to open and develop Alaska. Excellent headway has been made. Road-building has been continuous in the last decade under the direction of the Alaska Road Commission and, in recent years, the Bureau of Roads has built a number of local roads. Both are Federal agencies. The one builds roads and trails in the interior and the other only within and adjacent to forest reservations along the coasts. The Territory contributes in a limited way to road building and merges its projects with those of the Alaska Road Commission for economical ends in avoidance of duplicated effort.

The highway from Valdez and Chitina to Fairbanks is the main artery of the Alaska Road Commissions system. Although its use has been temporarily curtailed by the completion of the railroad, its permanent value and the wisdom of its upkeep cannot be doubted. Population will demonstrate its utility and the farsightedness of its builders.

Naturally the unopened interior most urgently requires roads and trails. Arteries to the railroad are essential that it may the more quickly come into full usefulness and be made to pay. Promising mineral districts, notably the Kantishna, the Copper River and Kuskokwim, wait for roads and trails to make possible their development.

In the forest reservations on the coasts, 20,-

000,000 acres, embracing many sections of un-forested lands, the problems of transportation, in great measure, are obviously those of water. Therefore, in Alaska the Bureau of Roads is unable to contribute largely to the general development of the Territory.

Mining.—While no new mineral discoveries of momentous importance were recorded during the year, impetus was given to mining enterprises by improved economic conditions and better transportation facilities. The working season of 1922 was marked at its opening by renewed and enlarged activities and the output of ore for smelting increased notably. Placer mining was successfully pursued in the Fairbanks region and elsewhere, and preliminary plans were effected for the resumption of dredging operations on an extensive scale on the Seward Peninsula, with Nome as a base. On the islands and mainland of Southeastern Alaska promising projects made headway. Established enterprises operated profitably as heretofore, producing ore to the value of millions, and newer lode properties underwent large and successful development. Mines at Willow Creek, above Anchorage, within reach of the railroad, and at the boundary line, in the vicinity of Hyder, a growing camp on the Portland Canal, received especial attention and gave gratifying promise. Rich claims are dormant in the various sections because of transportation and moneyed needs. In spite of the enormous yield of gold for years, Alaska, save in spots, has been prospected only in a desultory way and its deposits of precious metals are yet untold. But capital is required to reveal and demonstrate this unquestioned mineral richness and turn it to account. Nuggets are no longer found in paying quantities in the hills and streams and fortunes are not to be made "on a shoestring." The day of such things is gone. Dr. Alfred Brooks, of the United States Geological Survey, in his summary for the year, says "the Alaska mining industry is advancing, not retrograding" and that it is "now on a more substantial basis than ever before."

Oil.—Prospective oil discoveries in the vicinity of Cold Bay, on the Alaska Peninsula, and preparations for drilling by big organizations riveted popular attention upon that region and gave evidence of an impending stampede. Countless claims were staked and filed and, during the year, important activities, supported by ample capital, were under way and the utmost confidence was felt in the prospects. It was recognized that a strike of oil at tide-water would speed prosperity for the Territory and make for population and transform a barren country. Seepages in the Matanuska district in proximity to the railroad, giving abundant signs of oil deposits, also commanded notice. Meanwhile, the Katalla field, on Controller Bay, continued to yield high-grade oil of paraffin base in limited quantities from 13 wells. The extraordinary quality of Alaskan oil gives added interest to this natural resource.

Coal.—Alaska coal, long locked up, came into large local use by communities to the westward and the interior reached by the railroad, and the production is steadily increasing as obstacles are overcome. Several companies are operating

Matanuska mines profitably and the ensuing year should see all along the coasts Alaska coal supplanting the product now and hitherto imported from British Columbia and the States. For half a century unavailable, it is being made available at reasonable cost and the government is wisely encouraging private enterprise by building roads and spurs to going mines and buying coal for the railroad from one of these. The so-called lignite—actually a low-grade bituminous—under production in the Nenana or Healy fields, in the interior, is now extensively used most helpfully and these coal beds, easily accessible, are wide and appear inexhaustible. The production of coal, coincident with the completion of the railroad and a resultant part of that great project, means much materially to the whole of Alaska and results are far-reaching.

Fisheries.—It is estimated that 20,000 persons were employed in the fisheries of Alaska during the season of 1922, exceeding by 5,000 the number engaged in 1921. The total active capital represented in the fisheries approximated \$50,000,000 and the catch was valued at \$34,720,793. Salmon and halibut comprised the bulk of the product as heretofore. The run in some of the waters was unexpectedly large and tended to dispel the growing fears of depletion. In the Bristol Bay region the season was extraordinarily successful. The herring industry showed remarkable growth and convincing signs of permanency, and the canning of clams and shrimps assumed large business proportions.

Conservation of the fisheries is taking more practical form in needed regulation by the Department of Commerce through its Bureau of Fisheries. In its own interest, to safeguard the fish supply of the future, the industry requires and is to-day welcoming regulation and supervision. Overfishing during the war, under the spur of seeming necessity, demoralized the trade and poor seasons following created widespread alarm lest salmon and halibut be nearing exhaustion. The productive season just closed found some canneries unprepared and the resultant waste of unmarketable fish dumped back into the sea was large. Adequate facilities for canning and packing were often lacking. Under normal conditions, year after year, the waste is heavy in the rejection of fish because of size or species. Wholesome fish food in quantity sufficient to meet the needs of great communities in populous centers, or suffering foreign lands, is annually cast to the depths. Failure to utilize by-products involves a further waste. The setting aside of fishing reserves by order of the President now gives the Bureau of Fisheries full authority to make and enforce rules and regulations limiting the catch and number of traps and curtailing fishing areas and closing streams in the public good. Supervision of the canneries will mean simultaneously a closer inspection of the alien, largely coolie, labor brought to Alaska during the season. The migratory character of the industry in certain districts reduces to the minimum its benefits to Alaska, save in taxation imposed and paid. Great fleets come into the waters provisioned for the short season, with hordes of alien laborers, and make their enormous catches and go out. Naturally there is not native labor sufficient and available in remote

regions for fishing needs. Much of the land all along the coasts is fertile and adaptable to gardening and small farming. Fishing villages should spring up and the big packing companies are asked to aid in establishing such permanent communities.

Agriculture.—Of the 600,000 square miles comprising Alaska, it is estimated that 100,000 square miles are suited to agricultural development. The government railroad makes the best of this land accessible. Farming in the interior continues to advance and the acreage under cultivation in the Tanana, Matanuska and Susitna valleys is annually showing an increase. Almost everything is grown except corn, cotton, beans, melons and fruits. Wheat of finest grade has averaged from 25 to 30 bushels per acre. Small homesteaders near markets thrive and industrial population will stimulate agricultural development throughout the interior. Berries grow wild in great abundance everywhere. Millions of acres of inland are naturally adapted to grazing and dairying and the prospects in this direction are very bright.

Native agricultural products, as the territory settles up, will supply the needs of a large population and it is within reason to believe that, in course of years, Alaskan meat and dairying products will figure largely in the outside markets of the world. The agricultural experimental stations have rendered a magnificent service to the Territory in its retarded infancy. The farming possibilities of the great interior, added to fishing, mining and timber resources, strengthen faith in the permanent future of Alaska. A country fair held at Juneau, the capital, in September, attracted wide attention because of the wonderful exhibits of vegetables produced from the rich virgin soil on the coasts.

Reindeer.—Reindeer were first imported from Siberia about 1892 under the direction of the United States Bureau of Education with the object of making the natives economically independent. Laplanders were then brought to Alaska to instruct the natives in the care of reindeer and the importation of animals was continued during the 10 succeeding years until by 1902 the number had reached 1,280. Herds are now distributed among the principal native settlements from Point Barrow to the Alaska Peninsula. It is estimated that if there was the usual 20 per cent annual increase in 1922 the number of reindeers now in Alaska is approximately 259,000, two-thirds of which belong to the natives and one-third to the Laps and whites. The reindeer industry is rapidly extending and is greatly facilitated by the operation of the railroad.

Agricultural College and School of Mines.—A potent sign of the times was the opening in September of the Agricultural College and School of Mines at Fairbanks—the first institution of higher and technical learning in the entire Northland. Its enrollment is steadily increasing.

Forests.—The vast forests of Alaska are on the coasts, where the annual precipitation is abnormal, and they are thus virtually undangerous by fire. Otherwise, covering 20,000,000 of reserved acres, an army of fire wardens would be necessary for their protection. While Wash-

ington, Oregon and Idaho sustained heavy damage during the summer of 1922 from forest fires, Alaska was untouched save by a blaze in scrub timber and undergrowth on Baranoff Island, in June, which entailed small loss. Nature in copious rainfall freely affords protection which human hands could not give. Hence, the Forest Service in respect to fire hazards, is practically relieved of the obligation of guardianship in Alaska and enabled to devote its attention to the classification of lands for survey, the granting of timber-cutting rights, the leasing of small homesteads and fox farms within the reserves, principally on islands, the locating of power sites, and other duties.

Pulp and paper manufacturing enterprises, to which Alaska offers a most inviting field, are undoubtedly forthcoming. Companies are formed and being formed. Adverse economic conditions and difficulties of capitalization have delayed the consummation of such projects, but Alaska is sure destined to supply in large measure the pulp and print paper needs of America. One pulp mill is operating successfully on a limited scale and large projects are under way.

Practically all of the timber used locally in southern Alaska is supplied by the national forests. A total of only 18,000,000 board feet was cut from these forests for commercial use during the past fiscal year. In addition 3,000,000 board feet was taken free of charge from the Chugach forest by the Alaska Railroad Commission. No permits are required for, nor is a record kept of, the timber used by prospectors, settlers, farmers, or fishermen for personal use or for prospecting. See also FOREST SERVICE, UNITED STATES.

Public Schools.—Sixty-six schools for white children and children of mixed blood who lead a civilized life were maintained during the year. These are located all the way from Kotzebue Sound in the northwest part of Alaska to Portland Canal in the extreme southeastern section. One hundred and sixty-seven teachers were employed and the enrollment was 3,654 as follows: Elementary school, 3,207; high school, 447. The cost of maintaining these schools was \$362,190.93, representing a per capita expenditure of \$99.12. Schools are directed by a board of education with the governor as chairman and a commissioner of education, appointed by the board, is chief executive officer. The average school year is nine months. The public schools of Alaska are supported largely by the Territorial government. Schools in incorporated towns receive support to the extent of 75 per cent of the cost of maintenance up to a maximum of \$20,000. This restriction affects only two of the schools. The remaining 25 per cent is derived from local municipal taxation. Territorial appropriations are augmented by a small refund of Federal license taxes collected in Alaska. High school teachers are required to be college or university graduates. Seventy per cent of the elementary school teachers are either normal school or college graduates.

Native schools are conducted by the Federal Bureau of Education. See also EDUCATION, UNITED STATES BUREAU OF.

Territorial Finances and Banks.—The reve-

nues for the year amounted to \$575,475.70 as follows:

General Fund.....	\$486,580 75
School Fund, Current.....	88,696 45
School Fund, Permanent.....	198 50
Total.....	<u>\$575,475 70</u>

The total revenues for 1921 were \$563,474.01, showing an increase of \$12,001.69 for the year 1922. The total expenditures for the year were \$583,089.57.

Fifteen Territorial and three National banks do business in the territory. The Territorial banks are located at Ketchikan, Wrangell, Petersburg, Douglas, Juneau, Skagway, Cordova (2), Valdez, Seward, Anchorage (2), Iditarod, Nome, and Hyder and the National banks at Juneau, Fairbanks, and Anchorage. Aggregate banking figures for the Territory in October were as follows: Capital, \$805,000; surplus and undivided profits, \$578,012.59; savings and checking deposits, \$7,472,142.05.

Health.—The Territory enjoyed complete freedom from epidemic during the year and health conditions continued good, with a low rate of mortality.

Labor.—No strikes or labor disturbances occurred in any branch of industry.

Game.—Animals and birds abound in Alaska. Fur-farming is extending. Reports received from wardens agree, in the main, that game, large and small, is plentiful—in some districts increasing and nowhere being ruthlessly depleted.

Postal Progress.—Mail facilities appreciably improved during the year. The installation of a monthly service from Seward to the Alaska Peninsula and the Aleutian Islands, by means of subsidy to a steel steamer, proved a boon to the people of those remote regions and gave stimulus to life and industry. Better service was also provided in the interior. Few localities are now wholly cut off from the outside world.

Climate.—Misconception of the climate of Alaska is general. The ports of the coast, save at Nome and in the far north, are open the year around, with regular steamer sailings. In Southeastern Alaska the temperature is equable, averaging 40 degrees for the year, and the record on the Southwestern coast was but slightly lower. The highest temperature, 88 degrees, was at Strelna, on the Copper River Railroad, on 5 July, and the lowest 59 degrees below, at Allakaket, on the Arctic Circle, near the intersection of the Koyukuk River, on 4 March. The weather in the interior is similar to that of Montana, the Dakotas and Northern Michigan.

Purchase of Territory.—It has always been understood that the United States, in 1867, paid Russia \$7,200,000 for Alaska, but the "Letters of Franklin K. Lane," late Secretary of the Interior, disclose the information that of this sum \$1,400,000 covered a reimbursement of the expense of the visit of Russian fleets to American harbors of the North, a demonstration of friendship at a crucial period of the Civil War, and that the actual purchase price of the Territory, negotiated by Secretary of State Seward, was \$5,800,000.

Among the recently issued books relating to Alaska are the following: Stefansson, 'North-

ward Course of Empire'; Gilman, 'The American Northland'; Henderson, 'Civil Government of Alaska'; Brooks, Alfred, 'Minerals of Alaska'; United States Biological Survey, 'Reindeer Industry'; Rand McNally and Company, 'Alaska and Yukon'; Alaska Engineering Commission, 'Railroad Guide.'

SCOTT C. BONE,
Governor of Alaska.

ALBANIA, a geographical district of Europe and at present an independent state. It is made up of the former Turkish provinces of Janina and Scutari and of parts of the former vilayets of Kossovo and Monastir and is bounded by Jugoslavia, Greece and the Adriatic Sea.

The estimated area of the country is between 10,500 and 11,500 square miles. An international commission is at present determining the boundaries of the country. The population is about 1,400,000. The chief towns, with their populations, are as follows: Durazzo, the provisional capital, 5,000; Scutari, 32,000; Elbasan, 13,000; Argyrocastro, 12,000; Tirana, 12,000; Berat, 8,500; Korytza, 8,000; Valona, 6,500.

The Albanian people are divided in two great groups—the Ghegs, who dwell mostly in the north, and the Tosks who preponderate in the south. Religion causes a further division; about two-thirds of the population being Moslems and the remaining third Christian, being divided about equally between the Roman Catholic and the Greek Orthodox faiths.

There is an hereditary aristocracy in the country and a well defined feudal system. The clan system is in vogue.

There are very few schools in the country and these few are for the most part under the supervision of the Jesuit order. In recent years a normal school has been opened at Elbasan and a high school for boys at Scutari.

The Ottoman code of law is in force in the greater part of Albania, but strictly speaking no universal system of justice has been in force.

The greater part of the country remains uncultivated and those tracts under cultivation are dealt with in a most primitive way. The most fertile regions are the Adriatic littoral and the Korytza Basin. Here tobacco, olive oil and wool are the chief products. A coarse woollen cloth is made from the wool and about the sole textile product of the country. Copper, coal, gold, silver, lead and oil are said to be obtainable in commercial quantities, but the disturbed state of affairs have thus far hindered development.

There are few roads and no railways. There are five ports: San Giovanni di Medua, Durazzo, Valona, Porto Palermo and Santa Quaranta. There are no banks and although the country is said to be on a gold basis there is no currency. There is no state debt.

Recent History.—On 3 June 1917 the commander of the Italian forces in occupation of Albania proclaimed it an independent country and set up a provisional government at Durazzo. In 1921 difficulties arose with Serbia over the settlement of the eastern boundary and an invasion of the country by the Serbians was prevented only by the firm action of the Allied countries. At the head of the state is a Council

of Regents, composed of the representatives of the three great religious bodies in Albania. There is a Parliament of 77 members. Early in 1922 there were several changes of the cabinet. The Evangheli cabinet fell after a term of office lasting scarcely a month and was succeeded by that of Prishtina, which lasted but a few days. It was succeeded by the Kosturi cabinet which set out as a business administration. The Mirdites (Catholic Albanians of the north) appealed to the League of Nations, asking for protection against the encroachment of the Moslem government of Tirana. They formed their own independent republic and sought the recognition of the Allies.

On 8 March 300 rebels undertook to overthrow the Tirana government and to set up a government of their own. They were repulsed in a long day's battle at Tirana on the 10 March and the movement collapsed with the capture of the leaders on the same day. The revolt was the second deliberate attempt to embarrass the government in the presence of foreign diplomats, the Frontier Commission representing the Council of Ambassadors being then in Tirana at work on the details of the boundary settlement. Albania was formally recognized by the United States on 27 July 1922. The official announcement added that the Albanian government had been recognized by most of the great nations of Europe. The Albanian government invited the League of Nations to send representatives to study the Albanian situation at first hand. On 13 Oct. 1922 the Albania delegation to the League of Nations at Geneva announced that the definite form of the country's constitutional régime would be determined by a constituent assembly. The statement was made in reiterating the denial that Albania had become a republic.

ALBANY COLLEGE, a Presbyterian educational institution, founded in 1867 and located at Albany, Ore. In 1922–23 it had a faculty of 14 members (college 10, school of music 4), and a student enrollment of 74 in college and 111 in the school of music. The institution had property valued at \$98,056.58, an endowment of \$260,842.37, and an estimated income of \$30,000. R. E. Baker is vice-president.

ALBANY, Duchess of (Helène Frederica Augusta); b. 27 Feb. 1861; d. Innsbruck, Austrian Tyrol, 2 Sept. 1922. She was the daughter of the Prince of Waldeck-Pyrmont and sister of Queen Emma of Holland and, consequently, was aunt of the present Queen Wilhelmina. She was also aunt by marriage of the former Emperor Wilhelm of Germany, the Tsarina of Russia, King George of England and Queen Victoria of Spain. On 27 April 1882, she was married at St. George's Chapel, Windsor, to Leopold, Duke of Albany, the eighth child and youngest son of Queen Victoria, and went to live at Claremont. The Duke died suddenly in 1884 in the South of France, leaving her with a daughter. A posthumous son, Arthur Charles Edward, was born in July 1884 and succeeded to the Dukedom of Albany. In 1900 he became Duke of Saxe-Coburg on the Duke of Connaught's refusal of the title because he would not forswear his British allegiance. The Duke was removed from the British Peerage in

1917 by Act of Parliament for his German sympathies. He also renounced his honorary position as colonel-in-chief of the Seaforth Highlanders. The position of the Duchess of Albany as a British Princess whose son was a ruling German Duke was difficult. She was loyal to British interests and very active in war charities and gave up her home at Claremont to wounded officers. To raise money for her welfare work in Deptford, one of the poorest suburban districts of London, she sold her historical pearl necklace, worth £2,700, given to her by Queen Victoria, and organized a great costume ball at Devonshire House, which proved to be one of the most brilliant post-war festivities. The Duchess was very popular with her neighbors at Claremont.

ALBERT, Prince of Monaco: b. Paris, 13 Nov. 1848; d. there, 26 June 1922. He was the son of Prince Charles (3d) of Monaco, whom he succeeded as ruler of the principality in 1880. Prince Albert was a descendant of the Grimaldi family of Genoa, which has had possession of Monaco since 968. Consequently he was a member of one of the oldest dynastic houses in Europe. For 30 years he reigned as absolute sovereign of his small kingdom (eight square miles territory, with 23,000 subjects); but in 1911 he gave his people a constitution that provided for a national council elected by universal suffrage, which they have not accepted. Prince Albert owned the famous gambling-halls of Monte Carlo, from which he derived an enormous income, running from \$500,000 to \$1,000,000 a year. A portion of the funds were used to finance Prince Albert's researches in oceanography, which have been of great value to the world. As early as his 18th year he made the study of marine fauna and flora and all questions connected with oceanography, his chief pursuit. He equipped four yachts for deep-sea dredging and investigation of ocean currents; and in the latter field his discoveries are said to have aided the Allies in charting the drift of German and Allied mines in the North Sea and English Channel. During the war Prince Albert placed at the disposal of the American government his private estate at Monte Carlo for convalescent soldiers; and from 6,000 to 8,000 wounded enjoyed this retreat. The Germans seized the Prince's Château de Marchais near Rheims, threatening to destroy it unless they had a ransom of \$100,000. The money was never paid. In addition to his sea-studies, Prince Albert was interested in palaeontology, and organized excavations in the caverns of southern France and Spain that brought to light bones and flint tools of the Stone Age. In 1910 he established at Monaco a museum of oceanography to contain his marine collections; and in 1920 he founded a museum of human paleontology in Paris. In 1921 the National Academy of Sciences of the United States gave him the Agassiz gold medal for his work in oceanography. He made three visits to this country: in 1868 as a sailor in the Spanish navy; in 1893; and in 1921. He first married Lady Mary Douglas Hamilton, whose son Prince Louis, succeeded him as ruler of the principality at the age of 62. The Prince's first marriage was

annulled in 1880; and in 1889 he married the Dowager Duchess of Richelieu (Miss Alice Heine of New Orleans); but was divorced in 1902.

ALBERTA, a province of the Dominion of Canada, created out of the old Northwest Territories in 1905 under the terms of the British North America Act of 1867. It is bounded on the west by British Columbia, south by the United States, east by Saskatchewan and north by the Northwest Territory. The province has an area of 255,285 square miles and a population of 581,995 in 1921. The rural population is about three-fifths of the total. The chief cities, with their populations, are: Calgary (56,514); Edmonton (53,846); Lethbridge (9,436); Medicine Hat (9,272); Red Deer (2,203); and Wetaskiwin (2,048). Vital statistics for the year 1920 showed 16,565 births, 5,510 marriages, 5,675 deaths, an excess of 10,890 of births over deaths. There are 3,154 schools with 121,567 pupils. The University of Alberta had in 1922-23, 1,260 students. The provincial revenue is derived from Dominion subsidies, school lands, and provincial sources. With about two exceptions all the taxes except those on land values have been abolished throughout the province thus closely approaching the single tax idea. Provincial revenue from all sources in 1921 aggregated \$17,887,517 and expenditures \$17,364,466. The public debt of the province amounted to \$41,989,900 in 1920, less a sinking fund of \$1,231,159. Agriculture is the pre-eminent industry of the province although asphalt and coal are known to exist in rich deposits. The products of the province are dealt with under the article on the Dominion of Canada (q.v.). The executive authority of the province is vested in the lieutenant-governor, an appointee of the Dominion government, nominally at least, but actually it rests in the executive council or cabinet of the legislature. All provincial legislation is referred to the Dominion government at Ottawa for its approval. Members of the legislature are elected by direct popular vote. Women possess the right of suffrage. The legislature has 61 members, made up of 38 United Farmers, 14 Liberals, 4 Laborites, 3 Independents and 1 Conservative in 1922. The Lieutenant-Governor in 1922 was His Honor R. G. Brett. The Premier, President of Council, Provincial Secretary and Treasurer was Hon Herbert Greenfield.

ALBERTA, University of, a non-sectarian co-educational institution, founded in 1908 and located at Edmonton, Alberta, Canada. In 1922-23 it had a faculty of 125 members, 1,260 students, property valued at \$4,000,000 and an income of \$802,000. Henry Marshall Tory, M.A., D.Sc., LL.D., is president.

ALBION COLLEGE, a Methodist Episcopal but non-sectarian co-educational institution founded 25 Feb. 1861 and located at Albion, Mich. In 1922-23 it had a faculty of 40 members, 617 students, property valued at \$367,723.12 and an income of \$134,523.69. John W. Laird, M.A., D.D., LL.D., is president.

ALBRIGHT COLLEGE, an Evangelical co-educational institution, formally opened in 1894 and located at Myerstown, Pa. In 1922-23 it had a faculty of 18 members, 234 students and

property valued at \$365,000. Income figures not available. Rev. Levi Clarence Hunt, A.M., B.D., D.D., is president.

ALCOHOL. See PROHIBITION ENFORCEMENT.

ALDRIDGE, George Washington, American public official and Republican political leader: b. Michigan City, Ind., 28 Dec. 1856; d. on golf course near Rye, N. Y., 14 June 1922. His parents removed to Rochester, N. Y., and there his home remained to the end of his life. He was educated in the public schools, Rochester, Cary Collegiate Seminary, Oakfield, N. Y., and DeGraf Military Institute, Rochester. At his father's death in 1877, he assumed charge of a contracting business, in the conduct of which he built many important edifices in Rochester. His political career began in 1883, when he was elected a member of the Executive Board of Rochester. He served for 11 years. In 1894 he was elected mayor of Rochester. In 1895 he became State Superintendent of Public Works and during his term the capitol at Albany was built. He was a member of the State Railroad Commission, of which he was for a time chairman. In 1888 he was made a member of the Republican State Committee and placed on the executive committee, where he remained the rest of his life. He was a delegate to the Republican national conventions of 1896, 1900, 1904, 1908, 1912, 1916 and 1920, in the last of which he voted persistently for Warren G. Harding. In March, 1921, he was appointed Collector of the Port of New York, a post traditionally belonging to an "up-stater." Mr. Aldridge was a genial man, variously described as "boss," "leader" and "satrap." He was also known as "Uncle George." He was the last of the once invincible "Big Three," the others being Thomas C. Platt and Francis K. Hendricks. In later years he was one of the "Big Four" in Republican state politics, the other members being William L. Ward, Fred Greiner and Wadsworth. As a member of Governor Whitman's "Kitchen Cabinet," Mr. Aldridge had much influence, for he was Governor Whitman's closest adviser. He dropped dead on the golf links of the Westchester-Biltmore Country Club, near Rye, immediately after driving a ball. Mr. Aldridge was a member of the Rochester Historical Society, the Empire State Society, Sons of the American Revolution, the Elks, the Lotus, the Lawyers and the Republican clubs of New York City, one of the board of governors of the Society of Genesee, a member of the Rochester Municipal Act Commission, the Rochester Chamber of Commerce, and many other societies and clubs.

ALFALFA. See HAY.

ALFALFA WEEVIL. See ENTOMOLOGY, UNITED STATES BUREAU OF.

ALFRED UNIVERSITY, a non-sectarian, co-educational institution founded in 1836 and located at Alfred, N. Y. In 1922-23 it had a faculty of 25 members, 302 students, property valued at \$1,107,000 and an income of \$175,000. Boothe Colwell Davis, Ph.D., D.D., LL.D., is president. There is located at Alfred University

a State School of Agriculture of secondary grade (not college) with 14 instructors and 125 students.

ALGERIA, a region of northern Africa which now belongs to France. It has an area of 222,180 square miles and a population of 5,800,974, according to the census of 1921. France has divided the colony into two major divisions: Northern and Southern Algeria. Northern Algeria is further divided into the Territory de Commandement and the Civil Territory. The latter is being gradually extended as the natives are won over and military rule is rendered unnecessary. Thus in time the Territory de Commandement will be extinguished at the expense of the Civil Territory. Northern Algeria is divided into the three departments of Algiers, Oran and Constantine, and these in turn are subdivided into 17 arrondissements and 278 communes and 76 mixed communes. Southern Algeria is divided into four territories: Ain Sefra, Ghardaja, Touggout and the Sahara Oases. These are further divided into 14 communes, of which seven are mixed and seven native.

The census of 1921 gives the population according to departments and territories as follows:

Northern Algeria:	
Algiers.....	1,785,574
Oran.....	1,305,051
Constantine.....	2,162,612
Southern Algeria:	
Ain Sefra.....	163,529
Ghardaja.....	145,029
Touggout.....	202,743
Sahara Oases.....	36,736
	<hr/> 5,800,974 <hr/>

Of this population about 4,800,000 are natives, 500,000 are French, 75,000 are Jews, 25,000 are Moroccans, 135,000 Spaniards, 40,000 Italians and the remainder foreigners of various nationalities. The chief towns and their populations are: Algiers, 206,595; Oran, 141,156; Constantine, 78,220; Tlemcen, 43,090; Bone, 45,171; Sidi-bel-Abbes, 37,752.

Constitution and Government.—The colony is administered under the central authority of the Governor-General who represents the French Republic throughout the colony. There are Ministers of Justice, Treasury, Education and Religion for the non-native population, but all other services are under the Governor-General. He prepares the budget, which is kept distinct from that of France and is then voted upon by the Superior Council and the Financial Delegations. The former is made up mostly of the higher officials and a few elected members and the latter are the delegates of the taxpayers, both French and Moslem. The legislative powers are vested in the French Chambers, to which each department of Algeria sends one senator and two deputies. In addition there is an advisory council to the Governor-General.

Education.—According to the latest reports there were in the colony 1,298 schools of primary grade with a registration of 132,617 pupils. There were three normal schools for women and two for men, with an aggregate registration of 450. In the same year there were about

500 Moslem schools with 36,000 pupils. There are 16 institutions of secondary grade with 9,837 pupils. There are Moslem schools of higher grade in the chief cities, but there are no statistics available concerning these. For higher instruction there is a university at Algiers attended by over 1,400 students. There are also special schools of agriculture, commerce, etc.

Religion.—Mohammedanism is the religion of the native population. The number of adherents of the Jewish faith is given above under the estimates of population. Among the Europeans the Roman Catholic Church has the greatest number of communicants. This church has one archbishop, two suffragan bishops and about 400 clergymen—the majority of the latter being of the celebrated missionary order called the Peres Blancs.

Agriculture.—The regions best adapted to agriculture lie close to the seacoast and are largely in the hands of Europeans. The hilly districts are well adapted to grazing and the forest products are by no means negligible. Lack of adequate communications is the chief handicap to the development of the hinterland. The land is held under several systems—proprietor or owner-occupier, share farmer and the system known as metayage. In 1921, 2,904,811 acres were planted to wheat and there was a yield of 1,028,900 tons; barley was planted to 2,513,943 acres and yielded 1,099,300 tons; oats, 573,885 acres, yield 170,650 tons. Tobacco is grown very successfully. Other crops are Indian corn, potatoes, beans and tomatoes, with flax and silk as lesser crops. The European landholders along the fertile coastal lands grow great quantities of grapes, from which the wine yield in a recent year was 157,136,452 gallons. Dates, oranges, bananas and figs are grown in abundance and the production of olive oil is fast assuming great proportions. The forests are owned mostly by the colony or the communes and yield an annual revenue of about \$1,000,000. The last livestock census enumerated 202,839 horses, 1,092,996 cattle, 9,139,722 sheep, 4,000,000 goats and 108,000 swine.

Industry.—The colony produces iron, lead, copper, mercury and oil. Iron ore to the amount of 1,071,278 tons was extracted in 1920; in the same year 11,633 tons of lead were mined, 456,169 tons of phosphates, 26,422 tons of zinc and about 7,000 tons of coal.

Allaches, anchovies, sardines, sprats and tuna are fished for and captured in great quantity. The fishing industry gives employment to 6,000 persons and there is an annual catch valued at 17,056,897 francs.

Trade and Commerce.—According to the latest available trade returns (those for the year 1921) the foreign trade of the colony in that year was 3,761,000,000 francs. Imports were valued in American dollars at \$139,121,928 and exports at \$100,566,144. Sugar, cotton, and textiles are the chief imports, while the chief exports are sheep, wheat, figs, raw silk, wines and tobacco. As in the case of the other dependencies of France the trade is almost exclusively confined to the latter country.

Communications.—There is a colonial merchant marine totaling about 50,000 tons. The

mileage of the national roads is about 3,330. Railway lines have a mileage of 2,250, of which about 800 miles are privately owned. The colony has 786 telegraph offices connected by over 8,000 miles of wire. There are 6,250 miles of line of urban telephones and 11,000 miles of line of inter-urban telephones.

Banking and Finance.—The bank of issue is the Bank of Algeria which has a capital of 20,000,000 francs and a note circulation limited by law to 1,300,000,000 francs. There are also a number of agricultural banks on the co-operative plan which receive aid in the form of government funds. There are seven savings banks with 5,000,000 francs deposited to the credit of 21,000 depositors.

Since 1901 the Algerian budget has been prepared by a popular body, called the "financial delegations," divided into the four following principal groups: The European population in cities and towns; the French farmers; the Kabylans (one of the native races); and all other native races. The budget so prepared is generally approved with few modifications by the general council in Algeria and subsequently by the French government. The ordinary expenditures provided for by the successive budgets have gradually increased from 60,000,000 francs in 1902 to nearly 400,000,000 in the estimate for 1923.

Until 1913 the public debt of the colony was insignificant, but with the war came unsettled conditions, accompanied by several years of crop failure. Between the years 1914 and 1918 expenditures exceeded revenues by 372,000,000 francs. A loan of 145,000,000 francs has already been floated to cover a portion of this deficit and the balance was to be covered by credits in the budget for 1922.

Figures are not yet available to show whether the annual deficits have been eliminated, but as the actual receipts of the government for 1921 totaled only 304,758,276 francs, as compared with an estimate of 336,345,276 in the 1921 budget, this may be regarded as doubtful. The budget for 1923, submitted by the financial delegations in June 1922, is as follows:

Ordinary:	Francs
Receipts.....	387,830,024
Expenditures.....	387,610,375
Excess of receipts over expenditures..	219,649
Extraordinary:	
Receipts.....	102,118,117
Expenditures.....	102,118,117
Total receipts.....	489,948,141
Total expenditures.....	489,738,492
Total excess of receipts over expenditures.	219,649

An important expense of the Algerian government results from the excess of expenditures over revenues in the operation of the Algerian State Railways. This excess of expenditures amounted to 80,000,000 francs in 1921, but the budget allows for only 50,000,000 francs in 1922, and 14,000,000 in 1923.

In 1921 the total budget deficit, as announced by the Governor-General, amounted to but 81,000,000 francs, or only 1,000,000 francs in excess of that for railway operation, in spite of con-

siderable expense for purchasing cereals, following the crop failure of 1920.

The military taxes and the proceeds of the government monopolies and some miscellaneous revenues are paid to France.

Army.—The Algerian forces constitute the 19th Army Corps of the French service and consist of three divisions. There are 18 regiments of native soldiers but the officers and part of the non-commissioned officer personnel are French.

There are 13 regiments of Europeans. French residents are under the provisions of the French military service laws and the natives are obliged to serve three years with the colors after which they go into the reserve, subject to service in case of mobilization.

Miscellaneous.—The Governor-General in 1922 was Theodore Steeg, who received his appointment 29 July 1921.

ALIEN PROPERTY CUSTODIAN.—

The office of the Alien Property Custodian was established by Congress as a war-time Department under an act adopted 6 Oct. 1917, known as the "Trading with the Enemy Act".

The purpose for which this Department was established was the seizure of the property of enemies of the United States to prevent the use of such property in any way to aid the German or Austro-Hungarian governments, or people, or their allies during the prosecution of the war. Broad powers were given to the President, and such powers were delegated by the President to the Alien Property Custodian, the Attorney-General, the Secretary of State, and other officials of the Federal Government.

The duties of the Alien Property Custodian consisted in taking over, administering and conserving money or other property of any nature whatever belonging to "enemies" as defined by the "Trading with the Enemy Act" and the Executive Orders and Proclamations of the President issued in connection therewith. In general, the word "enemy" covered any person, corporation, partnership or association resident in enemy territory or in territory occupied by the enemy, officers or agents of the enemy governments, persons trading with or aiding or holding communication with the enemy, and persons interned by the United States or its allies. Money or property, however, of enemy nationals resident in the United States was not subject to seizure unless the owners were interned.

In order that the Custodian should be fully advised as to money or property in the United States subject to seizure, the "Trading with the Enemy Act" required that all persons having custody of such property should report the same to the Custodian who, in his discretion, issued demands, took title to the money or other property and then proceeded with the administration thereof, having the powers of a common law trustee. Under these demands, or by a voluntary surrender, almost every conceivable kind of property came into the possession of the Custodian. He seized moneys, bank accounts, stocks, bonds, notes, mortgages, real estate, wharves and docks, interests in partnerships, trust funds and incomes therefrom,—vested,

contingent and remainder interests in estates,—patents, copy-rights and trade-marks,—credits, actions-at-law and in equity, contracts and obligations. By virtue of his stockholdings in American corporations secured by his demands, he became in many instances majority or sole stockholder charged with the responsibility of selecting directors and supervising the conduct of woolen mills, steamship lines, ship yards, banks, mines, chemical companies, lumber mills, real estate corporations, as well as other miscellaneous industrial plants located in every part of the United States and its possessions. The office of the Alien Property Custodian became the greatest trust company in the world and assumed jurisdiction over money and other property of the estimated value of \$550,000,000. The moneys received by the Custodian were deposited with the Treasurer of the United States and the Treasurer was given the authority to invest such moneys in securities of the United States.

For the efficient and economical administration of the property so taken over, the Custodian appointed banks and trust companies of the United States as depositaries or agents, authorizing them to care for the property in their charge, collect the income therefrom and report and deliver the same to the Custodian quarterly. These depositaries have rendered invaluable service to the Custodian; in fact, without their aid the Custodian could not have taken over or administered such properties without a force many times larger than the one employed.

The property so taken is held under a trust designated by the name of the individual or concern whose property it was prior to the seizure. Wherever it has been necessary, whether for the conservation of the property, or to prevent waste, or for reasons of public policy, property has been sold and the proceeds deposited with the Secretary of the Treasury to the credit of that trust. The income collected from property still held is deposited to the credit of the trust, none of these funds being used for the maintenance or expenses of the Alien Property Custodian Department. The expenses of this Department are paid by annual appropriations by Congress.

A. Mitchell Palmer of Stroudsburg, Pennsylvania, was appointed as Custodian by President Wilson and took office 22 Oct. 1917. Under Mr. Palmer the Department was organized and rapidly increased in size until over 600 employees were utilized in the taking over and administering of the property reported and demanded. Mr. Palmer served as Alien Property Custodian until 3 March 1919, when he resigned and was succeeded by Francis P. Garvan of New York, who held this office until 12 March 1921. Thomas W. Miller of Wilmington, Delaware, the present incumbent, was then appointed by President Harding. The Department was reorganized and now consists of about 150 employees in the Washington office.

The total number of reports of enemy property rendered to the custodian during the entire period is about 50,000. The total number of trusts or trust accounts is about 38,000. These figures have been reduced by the cancellation of

erroneous or immaterial reports and by the return of property to proper claimants.

The return of such property is permitted under section nine of the "Trading with the Enemy Act" and the amendments adopted by Congress from time to time. This section permits the return of property seized by the Custodian to non-enemies, neutrals or allies, citizens of the new countries established by the various treaties of peace, and under certain conditions to various classes of enemy subjects, such as consular or diplomatic officers, internes, and women who by marriage with enemy nationals lost their American, neutral or allied citizenship. Claims for the return of these properties are filed with the Custodian and submitted with his recommendation to the Attorney General of the United States for a decision of allowance or disallowance. If allowed, the Custodian returns the property claimed. If disallowed, the claimant may bring suit in equity in the Federal courts to secure a judicial determination of his right of recovery. Property to the value of about \$200,000,000 has been returned to such claimants up to 1 Jan. 1922. On this date the money and other property still held by the custodian amounted to the value of about \$350,000,000.

The disposition of property not permitted to be returned under the provisions of section 9 of the "Trading with the Enemy Act" rests with Congress and further legislation is necessary by Congress before any such disposition can be made. Congress is impowered to confiscate, to return or to continue to hold the same. The Knox-Porter peace resolution, approved 2 July 1921, declaring a state of peace with Germany, states that the property of German nationals in the hands of the Custodian shall be held until Germany makes suitable provision for the satisfaction of claims of American citizens against the German government arising out of the World War. The provisions of this resolution were made part of the Treaty of Berlin with Germany. Similar provisions are found in the resolutions and treaties referring to Austria and Hungary.

THOMAS W. MILLER,
Alien Property Custodian.

ALLEGHENY COLLEGE, a Methodist-Episcopal co-educational institution, founded in 1815 and located at Meadville, Pa. In 1922-23 it had a faculty of 35 members, 543 students, property valued at \$2,500,000 and an income of \$195,000. Fred. W. Hixson, LL.D., is president.

ALLEN, Florence E., Justice of the Ohio Supreme Court: b. Utah. She spent her childhood climbing mountains and roaming in prairies and preparing for college. At 13 she entered Western Reserve College and was graduated there with honors. She played on the athletic teams and also played on the piano. She next spent two years in Berlin studying music and writing criticisms for *The Musical Courier* and returning to this country settled in Cleveland, Ohio. In 1906-08 she was on the editorial staff of the *Cleveland Plain Dealer*, taught at Laurel School and studied for her degree of master of arts at Western Reserve. After a year's study at the

Chicago University Law School she served as a legal investigator for the New York League for the Protection of Immigrants and entered the New York University Law School, where she was graduated in 1913. She lectured during this time for the New York Board of Education and for women's clubs in New York and Philadelphia upon current political history. In 1914 she returned to Cleveland and was admitted to the bar of Ohio in 1914. Two years later she argued before the Supreme Court of Ohio the constitutionality of the suffrage provisions in East Cleveland and Lakewood, Ohio, and won.

After serving as assistant county prosecutor for Cuyahoga County she was elected in 1920 judge of the common pleas court of Cleveland, receiving the largest vote ever given a candidate. She sentenced Frank Motto to the electric chair, the first death sentence in Cleveland for 13 years. In 1922 she was elected to the Supreme Court of Ohio as an independent candidate. She is the first woman to sit in a court of general jurisdiction, legal and equitable, civil and criminal, and the first woman in the world to preside in first degree murder cases. She set a new record for work in the common pleas court of Cuyahoga County disposing of 892 cases from 1 Jan. 1921 to 1 Sept. 1922 which included 579 trials, civil and criminal. Justice Allen is possessed of enormous energy. She arises every morning at five o'clock, does her housework, plays the piano for a time, and walks five and a half miles to court, where she is then ready to try the day's cases. She gave as her reasons for wanting to be a judge as follows: "to stimulate interest among women in the administration of justice and particularly in jury service; to help them realize their partnership with men in the making, application and enforcement of laws for the benefit of mankind."

ALLENTOWN COLLEGE FOR WOMEN, (commonly called—Cedar Crest College), an educational institution founded in 1867 and located at Allentown, Pa. Though controlled by the Reformed Church, it is non-sectarian as to enrollment. In 1922-23 it had a faculty of 22 members, 173 students, property valued at \$350,000, and an income of \$92,000. William F. Curtis, Litt.D., is president.

ALLIANCE FRANCAISE, Federation de l', a society organized in 1902 for the purpose of encouraging in America the study of the language, history and civilization of France. It is similar to the other race group societies, differing from them in its candid efforts to recruit members from among Americans of non-French stock. It consists at present of about 250 affiliated clubs or societies and has extended its activities to Canada. The affiliated societies send delegates to an Assemblée Generale Annuelle. The federation sends lecturers to the various societies, usually French authors of prominence on a visit to America. The federation publishes a *Bulletin Officiel* and *La France*. The honorary president of the federation is the Hon. Jules Jusserand, Ambassador of the French republic to the government of the United States.

ALLIED DEBTS. See EUROPEAN DEBTS; PEACE AND ARBITRATION, INTERNATIONAL.

ALMA COLLEGE, a Presbyterian co-educational institution founded in 1887 and located at Alma, Mich. In 1922-23 it had a faculty of 23 members, 292 students, property valued at \$703,000 and an income of about \$75,000. President, Harry Means Crooks, LL.D.

ALSACE-LORRAINE, the territory ceded to Germany by France after the War of 1870-71, and returned to France under the terms of the Treaty of Versailles of 1919—the return to date from the Armistice of 11 Nov. 1918. The German divisions of the former Reichsland into Lower Alsace, Upper Alsace and Lorraine have under French rule become the Departments of Bas-Rhin, Haut-Rhin and Moselle. The areas and populations of these divisions are as follows:

	Area (sq. miles)	Population
Bas-Rhin (Lower Rhine).....	1,848	651,586
Haut-Rhin (Upper Rhine).....	1,354	468,943
Moselle.....	2,403	589,120
Total.....	5,605	1,709,649

According to the report of Dr. von Dallwitz, the German stadthalter, published in 1914, there was in Alsace-Lorraine a French-speaking population of 204,262, while 1,634,260 were returned as German-speaking. The majority of the population are of the Roman Catholic faith, there being about 400,000 Protestants and 32,000 Jews in the three departments. Since the restoration of the territory to France about 87,000 Germans have been deported to Germany and a very great number have gone thither voluntarily.

In April 1919 the French put into operation a system of local government which was similar to that in France with the exceptions of the religious administration and the financial department. The former had been discontinued in France after the passage of the Separation Law but it was found that at least pending the reconstruction period a religious administration would be necessary in the restored provinces. The financial provisions were aimed at the stabilization of the mark in the provinces and to prevent its depreciation there while it was touching bottom in Germany proper. On 10 April 1919 the French began the task of transforming the administration of justice from the German forms and code to the French form and procedure. This change is still being brought about by a gradual change in the personnel, and a gradual introduction of French laws in place of the German laws and decrees. For an extended discussion of these changes consult Delahache, Georges, 'Les debuts de l'administration française en Alsace et en Lorraine' (Paris 1922).

ALUMINUM. According to the United States Geological Survey, the value of the aluminum produced in the United States in 1921, the last year for which authentic figures are available, was about one-fourth of the production in 1920, while the value of the aluminum consumed was approximately 35 per cent of the value of that consumed in 1920. The depression in all branches of the industry throughout 1921 was extreme. Domestic production of primary metal dropped in value from \$41,375,000 in 1920 to \$10,906,000 in 1921; while the secondary metal produced dropped in value from \$9,489,100 in

1920 to \$3,775,400 in 1921. Imports declined in value from \$13,077,022 in 1920 to \$8,889,791 in 1921; exports dropped in value from \$5,630,781 in 1920 to \$3,108,857 in 1921; while the value of the metal consumed dropped from \$58,310,300 in 1920 to \$20,462,300 in 1921. Apparently there was an over supply of all grades of aluminum in 1921. The quoted price of domestic metal was from 28 to 28.5 cents a pound at the beginning of the year. By July it had dropped to 24.5 to 25 cents a pound. On 1 December, the price was further reduced to 20 cents a pound. Imported aluminum was quoted at two to three cents a pound lower than the domestic product of similar grades. The average price for aluminum in 1921 was given by the American metal market as 21.21 cents a pound.

Abroad the situation in the aluminum industry was not materially different from what it was in the United States. In France, the industry suffered as it did in other countries. The output of aluminum ingots for the first six months of the year was 100 metric tons, as compared with 831 tons during the corresponding period of 1920. The German aluminum works found difficulty, not only in obtaining raw materials, but also in competing with low prices and a very much decreased demand.

Aluminum Products.—During 1921, 87 establishments engaged in the manufacture of aluminum products turned out goods valued at \$45,822,000, compared with \$75,278,000 worth of goods turned out by 83 establishments in 1919. Of the 87 establishments reported for 1921, 22 were located in Ohio, 15 in New York, 12 in Wisconsin, 6 each in Illinois and Pennsylvania, 5 in New Jersey, 4 each in California, Massachusetts and Michigan, 3 in Missouri, 2 each in Connecticut and Rhode Island and 1 each in Nebraska and Tennessee. Wisconsin producing 25.1 per cent of the total value of aluminum products turned out in 1921, was the leading State in the industry that year. The number of persons engaged in the industry in 1921 was 11,018, compared with 13,257 engaged therein in 1919. Salaries and wages paid in 1921 totaled \$13,945,000 compared with \$16,634,000 paid in 1919. Materials used in 1921 cost \$25,974,000, compared with \$49,272,000 in 1919.

Aluminum Chemicals.—The production of aluminum chemicals decreased in 1921, as compared with 1920, although the decrease was not so great as in some of the products made from bauxite. The total quantity of aluminum chemicals made and sold during the year was 184,820 short tons, valued at \$7,546,000. Alum produced in the United States dropped from 16,824 short tons in 1920 to 12,220 short tons in 1921. Aluminum sulphate dropped in production from 234,003 short tons in 1920 to 165,920 short tons in 1921. See METALLURGY.

AMERICAN ACADEMIES, ASSOCIATIONS AND SOCIETIES. Many organizations whose official titles begin with the word *American*, will be found under the important descriptive word of the title.

AMERICAN BANKERS' ASSOCIATION. See BANKERS' ASSOCIATION, AMERICAN.

AMERICAN BAR ASSOCIATION. A national organization of lawyers formed in 1878,

which devotes its influence to advancing the standards of legal education, promoting sound legislation and securing uniformity in State statutes, and regulating matters of general concern, such as commercial paper, sales, warehousing, etc. Beginning with 72 members, its membership now totals about 17,000. Its last meeting was held in San Francisco 9-11 Aug. 1922. At this meeting the Association agreed to petition Congress to create a permanent commission to prepare a system of rules of procedure for adoption by the United States Supreme Court; created a committee on American citizenship and authorized it to establish a bureau to promote actively the education, training and development of a better citizenship; adopted a report of its special committee on law enforcement, urging the establishment of a Federal bureau of records and statistics under the control of the Department of Justice at Washington, and recommended that the statutes in some States which make the jury the final judge of both law and facts be repealed. It further recommended that indeterminate sentence laws and probation be made to apply to first offenders only, and that the manufacture and sale of pistols and cartridges be absolutely prohibited except for official use. Another recommendation was that legislatures adopt the uniform fiduciaries act, the uniform act on status and protection of illegitimate children, the uniform aeronautics act and the uniform declaratory judgments act, which were prepared by the conference of commissions on the uniform state laws. It endorsed the bill prepared by the Patent Section, co-ordinating and codifying the existing trade-mark statutes and requested the Commissioner of Patents to promulgate rules prohibiting the soliciting of business by those registered as patent attorneys. It also provided for the appointment of a committee to investigate by what right laymen described themselves as patent attorneys and income tax attorneys in practice before departments and for other purposes. The Association also expressed the hope that some way might be found by which the United States might participate in the proceedings in the International Court of Justice and instructed the Committee on International Law to present a report at the next meeting suggesting changes in statutes of the present court, making it possible for the United States to become a party without further obligation.

The Association was addressed at this meeting by Chief Justice Taft of the United States Supreme Court; by Lord Shaw of Dunfermline; by Gov. William D. Stevens of California, who delivered the address of welcome; by Senator F. Dumont Smith of Kansas and by Chief Justice Lucien Shaw of the Supreme Court of California.

Considerable interest was manifested in the announcement in the fall of 1922 that a committee of the Bar Association headed by Chief Justice Taft had completed the drafting of a code of conduct for the judges of America. This code, it was stated, is designed to complement and complete similar work undertaken by the Association in 1908 which dealt with lawyers and left the bench untouched. According to reports, the code drafted by Chief Justice Taft and his associates not only prescribed rules

of conduct governing the public and official acts of judges but also lays down definite lines of conduct for them in their private lives.

Officers elected for the year 1922-23 were as follows: President, John W. Davis, New York City, former Ambassador to Great Britain; Secretary, W. Thomas Kemp, Baltimore, Md.; Treasurer, Frederick E. Wadhams, Albany, N. Y.

AMERICAN-COLOMBIAN TREATY.

See PEACE AND ARBITRATION, INTERNATIONAL.

AMERICAN INDIANS. See INDIAN AFFAIRS.

AMERICANISTS, International Congress of. See PEACE AND ARBITRATION, INTERNATIONAL.

AMERICAN LABOR PARTY. See FARMER-LABOR PARTY.

AMERICAN LEGION, The, a patriotic, non-partisan, non-political, non-military organization of veterans of the World War incorporated by Act of Congress of 16 Sept. 1919. Its objects are: "To uphold and defend the Constitution of the United States of America; to maintain law and order; to foster and perpetuate a 100 per cent Americanism; to preserve the memories and incidents of our association in the Great War; to inculcate a sense of individual obligation to the community, state and nation; to combat the autocracy of both the classes and the masses; to make right the master of might; to promote peace and good-will on earth; to safeguard and transmit to posterity the principles of justice, freedom and democracy; to consecrate and sanctify our comradeship by our devotion to mutual helpfulness.

"Any person shall be eligible for membership in the American Legion who was regularly enlisted, drafted, inducted or commissioned, and who served in active duty in the naval, military or air forces of any of the governments associated with the United States during the great war: Provided, that no person shall be entitled to membership (a) who, being in the Army, Navy or Marine Corps of the United States during said period, refused, on conscientious, political or other grounds to subject himself to military discipline, or unqualified service, or (b) who, being in such service, was separated therefrom under circumstances amounting to dishonorable discharge and has not subsequently been restored to an honorable status."

The Legion is organized into departments and these in turn into posts. There is one department in each State, in the District of Columbia and in each territory of the United States, including Alaska, the Canal Zone, Hawaii, and Philippine Islands. Other departments outside the United States are Canada, Continental Europe and Mexico. There are Legion posts in the following other countries: Argentine, Brazil, British Isles, Chile, China, Cuba, Guatemala, India, Japan, Korea, New Zealand, Peru, Porto Rico, Portuguese West Africa, Santo Domingo, Spanish Honduras and Venezuela.

The Legion's membership was nearly 1,000,000, distributed in 11,151 posts on 1 Nov. 1922. National headquarters is now in the Chalfant Building, 24 East Michigan Street, Indianapolis, Ind. The *American Legion Weekly*, pub-

lished by the Legion, is located at 627 West 43rd Street, New York.

The national officers 1922-23 are: Commander, Alvin Owsley, Denton, Texas; vice-commanders, Edward J. Barrett, Sheboygan, Wis.; Watson B. Miller, Washington, D. C.; E. Erie Cocke, Dawson, Ga.; Robert O. Blood, Concord, N. H., and Chiles P. Plummer, Casper, Wyo.; adjutant, Lemuel Bolles, Seattle, Wash.; treasurer, Robert H. Tyndall, Indianapolis, Ind.; judge advocate, Robert A. Adams, Indianapolis, Ind.; chaplain, Father William O'Connor, Cincinnati, Ohio; historian, Eben Putnam, Wellesley Farms, Mass.; assistant adjutant, Russell G. Creveston, Marion, Ind.

A group of temporary officers met informally in Paris in February, 1919, and prevailed on general headquarters to permit a meeting of delegates selected from the ranks of officers and enlisted men of all divisions and non-combatant units. At this meeting in Paris, in March nearly 1,000 were present. Milton J. Foreman, of Chicago, presided. The name, American Legion, was determined upon, the aims and objects of organization formulated. An executive committee of 100 was named. This committee sent 15 of its members to the United States in April to spread the organization among the troops and veterans at home. A caucus was called in May at Saint Louis. The overseas delegates met with home delegates representing every State. The Paris plan was adopted and another executive committee named, which shortly consolidated with the American Expeditionary Forces committee under the name of the Joint National Executive Committee of 34. Henry D. Lindsley, Dallas, Texas, was chosen as chairman. Temporary headquarters were opened in New York and the work of organizing was seriously begun.

When the first national convention assembled in Minneapolis in November, 1919 there were nearly 5,000 posts with a total membership of 500,000 in all States. That convention adopted a constitution, elected Franklin D'Olier of Philadelphia, national commander and in a series of resolutions made known to the country the national principles for which the ex-service man stood. Permanent national headquarters were located in Indianapolis. To assure that at all times the Legion should be free from partisan political considerations, it was written in the national constitution that "no candidate for or incumbent of salaried elective public office shall hold any office in the American Legion or any department or post thereof."

After the convention, the Legion began creating the machinery necessary to the proper advocacy of its program. A national legislative committee was established at Washington and various national committees and commissions created to study specific questions. In the States under the authority of the State organizations, similar committees and commissions were formed, to work in conjunction with the public officials of States and the State legislatures. The local posts likewise organized to the extent necessary to discuss Legion policies in their local aspects with the governing bodies of counties and municipalities. This machinery began to function almost immediately and continues to function with increasing effectiveness.

At the second national convention, Frederick W. Galbraith, Jr., of Cincinnati, was elected national commander and became the Legion's great leader. A dynamic, vivid, forceful and absolutely fearless personality, within a few months, he brought the Legion to a commanding position in national affairs. Mr. Galbraith was killed in an automobile accident June 1921, and was succeeded by John G. Emery, of Grand Rapids, Mich.

The Legion has accomplished much toward fulfillment of its program. A few examples will serve to illustrate its activities. It brought about an entire reorganization of the government machinery dealing with disabled veterans.

Congress passed the Sweet Bill entrusting the work of hospitalization and rehabilitation to a newly-created body, the United States Veterans' Bureau (q. v.), which was decentralized into 14 regional offices in all parts of the country.

The Legion has been active in the suppression of radical machinations; has opposed violence. When a body of peaceful Armistice Day paraders were fired upon from ambush by radicals and four veterans killed, at Centralia, Wash., the local Legion post went out, rounded up and captured the radicals, turned them over to the civil authorities, and then guarded the jail against a mob of infuriated citizens.

In the spring of 1921, when the French government wanted to invite a party of representative Americans to revisit the battlefields and cities of France, the American Legion was asked to organize the pilgrimage. That remarkable mission left a deep impression upon the veterans of Europe. It resulted in a movement to amalgamate the 140 odd French veterans' societies into one called Legion Française. The British Veterans' societies now have united into one organization called the British Legion.

The Legion assists in the naturalization of foreign-born citizens. It helps educate these new or prospective citizens; to impress upon them the duties, obligations and benefits of American citizenship; serves veterans in need, and their dependents. Through its national service bureau, the Legion has adjudicated claims aggregating \$13,000,000 in favor of veterans. The Legion maintains a nation-wide employment service. It is working to increase the agricultural resources of the country and induce the veterans to go to the land and avert the concentration of unemployed in the cities. It organized and promotes proper observance of Memorial Day, Armistice Day and other patriotic anniversaries.

At its 1921 national convention in Kansas City, the Legion entertained one of the greatest gatherings of World War heroes in history, including Marshal Foch, General Pershing, Admiral Beatty, General Diaz and Lieut.-Gen. Baron Jacques. Vice-President Calvin Coolidge represented President Harding. The gathering drew a crowd of 125,000 persons.

History of Adjusted Compensation.—The guns had hardly ceased smoking on the Western front when talk arose of an adjustment of the pay of the men and women who had fought. With a two to four years' handicap in point of time, and with \$60 given him by the Government—enough to buy a very ordinary outfit of civilian clothing—the ex-service man was re-

turned to civil life. The Legion figured this man's actual loss in dollars and cents as not below \$840. Based on an average wage of \$100 a month before entering service, or \$1,200 a year, and deducting the \$30 a month or \$360 a year he earned in service; his loss is \$840. If his service covered two years he was out \$1,680. To balance this he received board on an average ration allowance of 50 cents a day, or \$365 in two years, and less than \$100 in clothing at most. Subtracting this from \$1,680, the remainder is \$1,215, the American soldier paid for the privilege of serving America for two years.

In response to suggestions from civilian origin, the Legion discussed compensation at its convention in Minneapolis in November of 1919 and adopted the following resolution: " . . . The American Legion recognizes that our government has an obligation to all service men and women to relieve the financial disadvantages incident to their military service—an obligation second only to that of caring for the disabled and for the widows and orphans of those who sacrificed their lives, and one already acknowledged by our allies, but the American Legion . . . leaves with confidence to Congress the discharge of this obligation."

Congress did nothing. Months passed. In March, 1920, National Commander Franklin D'Olier called a meeting of the national executive committee in Washington. All Legion departments in the United States were represented. Preceding the general meeting a special committee had worked out a bill believed to represent the desires of ex-service men. The executive committee approved the bill and it was introduced by Representative Joseph W. Fordney, of Michigan, virtually without change. This Fordney bill was passed by the House in May, 1920. It then went to the Senate Finance Committee for hearings. The bill, as amended in the House, provided a choice of one of the following provisions: cash payment, service certificates, land settlement, farm or home aid, vocational training. The bill which the national executive committee drafted was supported at the Legion's national convention in Cleveland in October, 1920, when the delegations of only two departments, among the smallest in membership—voted on the first roll call against the cash feature of the bill, only. A favorable report on the bill was made by the Senate Finance Committee just before adjournment of Congress in March, 1921. This adjournment forced the Legion to begin the fight for the bill all over again.

Congress reconvened on 11 April for the first session of the 67th Congress. On that day, the Adjusted Compensation Bill was introduced in the House and in the Senate. Immediately upon the convening of Congress the Legion's national legislative committee took steps to obtain action upon the bill in the Senate.

Hearings opened before the Senate Finance Committee on 2 June, and the National Commander F. W. Galbraith, Jr., and other Legion representatives appeared before that committee. With the exception of striking out the land aid and settlement provisions, the bill remained the same as introduced in the 66th Congress. Hundreds of letters and telegrams poured into the Senate Committee urging a favorable report on the bill.

After this long fight, the Senate Finance Committee reported the bill favorably on 20 June. On 5 July 1921, the Senate made the bill the unfinished business by a vote of 46 to 4.

At this juncture, Secretary of the Treasury Mellon wrote a letter to Senator Frelinghuysen, of New Jersey, strongly urging Congress to postpone consideration of the bill because, in his opinion, the Treasury was unable to meet its costs. This was followed by an address in the same vein by President Harding, who spoke before the Senate on 12 July. At his request, the Senate recommitted the bill to the Senate Finance Committee. No alternative plan of adjusted compensation nor any constructive substitute was suggested by the President.

The Legion's national convention in Kansas City, 1 Nov. 1921, indorsed the compensation measure without a dissenting vote.

The regular session of Congress convened 5 Dec. 1922, and shortly thereafter the Legion's legislative committee began to press for action on the compensation bill. At a caucus of the majority of the House on 26 January, the Ways and Means Committee was instructed to begin hearings on the bill. On 31 Jan. 1922, National Commander Hanford MacNider appeared before this committee arguing for action. Secretary Mellon again opposed the bill in a hearing before the Ways and Means Committee of the House, 2 February and on 9 February, the committee completed its hearings on the bill. At an executive session of Republican members of the committee, sub-committees were appointed to finally perfect the bill and to study the question of providing revenue to carry out its purposes. Leaders of both the Senate and the House then conferred with the President. In a letter made public 17 February, President Harding stated that "it continues to be my best judgment that any compensation legislation enacted at this time ought to carry with it the provisions for raising the needed revenues, and I find myself unable to suggest any commendable plan other than that of a general sales tax." Thereupon the Ways and Means Committee in executive session, after deliberations with the Legion's legislative committee, perfected H. R. 10,874 as an answer to the President's "sales tax" letter. In this bill the cash feature was restricted to men entitled to \$50 and less, and the cost of the bill reduced to a total of \$242,700,000 for the first three-year period.

Following are the general terms in brief of the bill at this period:

Adjusted pay for the veteran at \$1 a day for home service and \$1.25 for service overseas, with limits of \$500 and \$625, respectively. From this is subtracted the \$60 given on discharge. The remainder is called the adjusted service credit. The veteran may apply this to any of the five following options:

(1) Cash, to those whose adjusted service credit is \$50 or less.

(2) Adjusted service certificate in the form of a paid-up 20-year endowment policy of 125 per cent of the cash allowance plus interest at 4½ per cent, compounded annually. The veteran has the immediate privilege of borrowing 50 per cent of the face value of this certificate.

(3) Vocational training aid of \$1.75 a day to 140 per cent of the adjusted service credit.

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(4) Farm or home aid to extent of 125 per cent of the adjusted service credit.

(5) Land settlement.

After a debate, 23 March, which lasted four hours, the House passed the adjusted compensation measure by a vote of 333 to 70. It was immediately referred in the Senate to the Senate Finance Committee.

A caucus of the majority party on 17 April adopted a resolution of instruction, authorizing the Senate Finance Committee to favorably report the bill, and recommended that it be passed by the Senate at this session.

National Commander MacNider and other Legion officials, 24 April, conferred with the majority members of the finance committee. Leaders of the committee gave assurances that the bill would be favorably reported and acted upon. Following a conference of a number of Senate leaders with President Harding a little later, several senators told the Legion's committee that the President would sign the bill.

On 23 Aug. 1922 the bill came before the Senate for action. Senator McCumber, chairman of the Finance Committee, led the fight for compensation. The Senate Finance Committee amendments had eliminated the land reclamation features of the bill. Accordingly, upon the floor of the Senate the McNary amendment, providing for the reclamation of land through the issuance of and sale of bonds, was discussed and adopted. While the McNary amendment was under discussion, it was freely predicted that the method of land reclamation which it provided would prove of such great immediate cost that its inclusion in the Legion's bill would make certain a veto by the President. The Simmons amendment, providing that all interest payments by the Allies upon their debts to this country should be used to pay the expense of compensation, was then adopted. Voting began on the bill 31 August. The result was 47 for compensation and 22 against. Following a number of conferences between the Senate and House, the compensation bill was formally transmitted to the White House, 16 September. The measure was vetoed by President Harding on 19 September.

The following resolution was adopted unanimously at the fourth annual national convention of the Legion, held in New Orleans, 16-20 Oct. 1922:

"Resolved, That we, the American Legion, at the Fourth National Convention assembled, do reaffirm our belief in the American Legion plan for adjusted compensation, with full confidence of the support of the American Legion, and we do now instruct the newly elected National Commander, the National Executive Committee, and the National Legislative Committee, to continue the fight for this legislation until it has been enacted into law."

STATE AID TO VETERANS

Alabama.—Exemption from payment of license to practice medicine.

Arizona.—Offers assistance in settling on farms and provides help in buying homes.

Arkansas.—No action.

California.—State civil service preference for veterans has been adopted. State legislation enacted and confirmed by referendum, November

1922, to provide educational aid up to \$1,000 and aid in farm and home settling of all in United States service or dependents. Veterans' welfare commissions or boards have been instituted also. Bond issue of \$10,000,000.

Colorado.—Has adopted state civil service preference for veterans, and offers assistance in settling on farms. State legislation enacted appropriating \$200,000 at rate of \$200 each to all in United States service for vocational training.

Connecticut.—Has adopted state civil service preference for veterans and has granted exemption from taxation. Provides relief for needy veterans.

Delaware.—No legislation enacted.

District of Columbia.—No action.

Florida.—A recent law creates a commission to be appointed by the governor for the purpose of investigating the feasibility of State adjusted compensation for ex-service men. The commission is to draw a suitable bill acceptable from the standpoint of the ex-service man, and also acceptable to the people of Florida, and submit the same to a State convention of the American Legion for its indorsement. The plan is to present the bill so drawn and indorsed to the next session of the Florida legislature in April, 1923.

Georgia.—Exemption from payment of road and poll taxes.

Idaho.—The sum of \$100,000 has been appropriated for the purpose of co-operating with the United States Government in carrying on soldier settlement work through reclamation projects. Veterans' welfare commissions or boards have been instituted.

Illinois.—State civil service preference for veterans has been adopted, and offers aid for education of veterans. State legislation confirmed by referendum November, 1922, paying cash bonus of \$15 per month of service (at least two months) at a maximum of \$300, to discharged soldiers and sailors. Bond issue of \$55,000,000.

Indiana.—Bill up for referendum. Provides \$10 a month for each month of service.

Iowa.—Bill approved by referendum November, 1922, providing 75 cents for each day in service. Civil service preference provided. Welfare commissions and boards established.

Kansas.—A bill providing for the payment of \$1 per day to ex-service men, was passed by the legislature and confirmed by popular referendum November, 1922. Civil service preference.

Kentucky.—Scholarships in either State University or eastern or western Kentucky normal schools.

Louisiana.—State legislature appropriated \$25,000 to help defray costs of fourth national convention, American Legion. Law passed permitting New Orleans to turn over to American Legion the home it now occupies in that city.

Maine.—Maine pays a flat bonus of \$100 to soldiers who served in the World War at any time from 6 April 1917, to 11 Nov. 1918, inclusive. Provides relief for needy veterans.

Maryland.—State legislature enacted a bill providing for a bonus to all ex-service men. It was adopted by popular referendum but declared unconstitutional by the courts.

Massachusetts.—Massachusetts pays a flat bonus of \$100 to veterans who were residents of

the State for six months or more. State civil service preference law has been adopted; exemption from taxation granted; veterans aided in finding employment, and relief for needy veterans is provided.

Michigan.—Michigan pays \$15 for each month of service between 6 April 1917, and August, 1919. Civil service preference and partial exemption from taxation.

Minnesota.—A compensation of \$15 for each month in service between 6 April 1917, and 30 July 1921. Civil service preference.

Mississippi.—The State legislature has passed a law providing that all money received by the state from the United States for the care of ex-service men, disabled during the war, shall be paid into the general fund of the treasury and allotted by a State board of control to such institutions in the State as the said board shall deem proper.

Missouri.—A bill authorizing the payment of \$10 per month to each ex-service man who resided in this State one year or more before enlistment, was passed by referendum vote, 2 Aug. 1921, and compensation is now being paid. State civil service preference, aid in employment.

Montana.—Compensation of \$10 per month, not to exceed \$250, to be paid to men who were citizens of Montana at the time of entry into the service and who have been honorably discharged and who did not refuse to do military duty because of conscientious scruples. Approved by popular referendum in November, 1922. State civil service preference; have instituted veterans' welfare commissions or boards, and provide relief for needy veterans.

Nebraska.—State legislation enacted for care and relief of needy, benefiting all in United States service, or widow, dependents, etc. Interest on \$2,000,000 invested in United States, Nebraska State or municipal bonds. Provides aid for education of veterans, and veterans are aided in finding employment.

Nevada.—Civil service preference and aid in finding employment.

New Hampshire.—Compensation of \$100 each, to all in United States service. Exemption from poll taxes. Aid for needy.

New Jersey.—Compensation of \$10 for each month in service between 25 March 1917, and date of discharge. Maximum \$100. In case of deceased persons, payments made to dependents. Preference in employment, State employment bureau and exemption from payment of poll and property taxes.

New Mexico.—Exemption from poll tax and property to amount of \$2,000. Has a functioning State settlement board, which is authorized by law to co-operate with the Federal government in settling ex-service men upon the land.

New York.—A compensation of \$10 for each month or for a major fraction of month in service over two months between 6 April 1917, and 11 Nov. 1918 (minimum \$20—maximum \$250), on condition that applicant resided in State at time of enlistment and date of act, was provided by the Act of 2 Nov. 1920, but the Court of Appeals of the State held that this law was unconstitutional. The compensation can only be authorized through an amendment to the State

constitution. Preferential rights to State employment, aid for sick and disabled.

North Carolina.—A soldiers' settlement board co-operates with ex-service men in the settlement of State lands, and the securing of useful employment and rural homes.

North Dakota.—Compensation of \$25 for each month in service to be used for purpose of buying a home or securing an education within the State of North Dakota, and for no other purposes. Partial exemption from State tax levies.

Ohio.—Ohio paid compensation at the rate of \$10 per month, but not to exceed \$250 for the full period of active service to date of separation.

Oklahoma.—Voters at November, 1922, election defeated proposed constitutional amendment providing for bonus of \$50.

Oregon.—Cash compensation of \$15 per month for each month or major fraction thereof between the dates of 6 April 1917, and 11 Nov. 1919, exclusive of the first 60 days of service, maximum, \$500; or a loan for the purpose of buying a farm or home, in an amount not to exceed \$3,000 to any one person. Welfare commissions and boards, and relief for needy veterans.

Pennsylvania.—Compensation bill passed providing payment of \$10 for each month in service, maximum \$200. Bill must lie over for two years, be passed by next legislature, and then be submitted to referendum at an election.

Rhode Island.—A lump sum bonus of \$100. In case of death, it is payable to dependents or heirs-at-law. Applicant must have been a resident of the State six months prior to entry into service. Any person receiving bonus from another State not eligible. Financial assistance to disabled.

South Carolina.—Ex-service men under certain conditions are exempt from State taxation. Free tuition at State college.

South Dakota.—Pays \$15 for each month in active service between 6 April 1917, and 1 Oct. 1919—maximum, \$400. State civil service preference. Aid for education. Help in buying homes and settling on farms. Relief for needy. Funds out of which loans are made to veterans have been authorized.

Tennessee.—Soldiers' settlement board co-operates with central government in providing useful employment and rural homes for ex-service men. This board may undertake reclamation projects, and acquire land by purchase, gift or otherwise; sell or rent the land acquired or undertake any work of farm improvement.

Texas.—Grants exemption from payment of poll tax.

Utah.—Senate bills 79 and 80, 1919, effective 15 April 1919, provided for a loan of \$2,000,000 to be used in co-operation with the United States in providing rural homes for veterans. This act was repealed owing to the fact that the Federal government had not taken steps to co-operate.

Vermont.—A bonus of \$10 per month for each month while in service, but not to exceed one year, or \$120. Provisions do not apply to commissioned officers.

Virginia.—No legislation enacted.

Washington.—A bonus of \$15 for each month, or major fraction thereof, of service

between the dates of 6 April 1917, and 11 Nov. 1919, is payable to ex-service men and to citizens of the United States serving with any of the Allied governments. State civil service preference. Assistance in settling on farms. Veterans' welfare commissions or boards have been instituted. Aid in finding employment. Relief and loans to ex-service men.

West Virginia.—Relief for needy veterans.

Wisconsin.—Bonus of \$10 per month of service, \$30 per month for education up to \$1,080, and \$30 per month relief for disabled, to all in United States service. State civil service preference. Aid for education of veterans available. Veterans' welfare boards or commissions. Relief for needy veterans.

Wyoming.—Land settlement board co-operation with Federal government. Partial exemption from taxation.

NEW ORLEANS CONVENTION

The fourth annual national convention of the Legion, 16-20 Oct. 1922 at New Orleans entertained Gen. John J. Pershing, Kenesaw Mountain Landis, high commissioner of baseball; Samuel Gompers, president of the American Federation of Labor, and 23 foreign delegates to the conference of the Interallied Veterans' Association, or Fidac, which met at the same time, and a number of other celebrities representing organizations of national importance. Among the important things the Legion did were: Reaffirmed belief in the adjusted compensation bill and instructed the incoming administration to fight for the enactment of this legislation. Demanded the removal of Brigadier-General Sawyer from the post of Chief Co-ordinator of the Federal Board of Hospitalization. Urged enactment of a universal service act providing for the drafting of money, manufacturing facilities and labor as well as fighting men in the event of a national emergency declared by Congress. Urged that a national claim adjustment campaign be started by the United States Veterans' Bureau in co-operation with the Legion on 1 Jan. 1923. Ordered publication in book form of "Who Got the Money?" reproducing the series of articles on war and post-war profiteering in issues of the *American Legion Weekly*. Re-adopted the French poppy as the Legion's official flower. Authorized study of plan to establish a national home for destitute and orphaned children of deceased Legionnaires. Recommended study of plan to establish within the Legion a mutual aid and benefit division, having a loan bureau as a branch. Opposed any general amnesty movement. Demanded that Congress provide a World War archives building. Recommended that the Friday prior to the first day of May of each year be set apart as Americanism Day, on which all Legion posts shall hold patriotic exercises.

EUGENE J. CADOU,

Director, American Legion News Service.

AMERICAN LIBRARY ASSOCIATION. See LIBRARY ASSOCIATION, AMERICAN.

AMERICAN MUSEUM OF NATURAL HISTORY. See NATURAL HISTORY, AMERICAN MUSEUM OF.

AMERICAN PEACE SOCIETY. See PEACE AND ARBITRATION, INTERNATIONAL.

AMERICAN RELIEF ADMINISTRATION, The, a private charitable organization, which since 1919 has conducted general relief and child-feeding operations in 23 countries, has during the past year been engaged principally in combating the famine in Russia which affected an area with a population of some 40 millions. The signs of this famine, one of the greatest in the history of the world, began to appear in the summer of 1921 and an appeal to the world for aid was made through Maxim Gorky in behalf of the Russian people and the Soviet government. This appeal was answered by the American Relief Administration, through its chairman, Herbert Hoover, and an agreement similar to the agreements between the Administration and other countries was made with the Soviet government and signed at Riga on 20 Aug. 1921. Relief operations were commenced immediately and by 1 Jan. 1922 the Administration's original program of feeding 1,000,000 children had been realized. From that time forward as rapidly as funds became available the relief program was extended and by the middle of the summer of 1922 approximately 10,500,000 famine sufferers were being supported by American food through the organizations of the American Relief Administration, which were established not only in the Volga Valley from Nijni-Novgorod to Astrakhan and in the cities of Petrograd and Moscow, but also through the Ukraine and Southeastern Russia where famine conditions had developed.

Coincident with its feeding program the American Relief Administration carried out an extensive medical program which included the rehabilitation of hospitals throughout Russia by furnishing hospital equipment, surgical instruments and medicines, the inoculation of hundreds of thousands of persons against typhoid, paratyphoid, smallpox and cholera and a general program of sanitation in the cities in the affected areas.

A food remittance system was set up by which persons anywhere in the world were enabled to purchase from the American Relief Administration standard food packages at \$10 each, which were delivered from American Relief Administration warehouses in Russia to the designated beneficiaries. Up to 31 Dec. 1922 these food packages to the value of over \$11,000,000 had been bought. During the summer of 1922 the American Relief Administration was delivering \$10 food packages to individuals in Russia at the rate of 3,210 per day.

Considerable amounts of clothing have also been distributed in Russia in the course of this operation. Because the need of clothing had become so acute during 1922 the American Relief Administration established a clothing remittance system similar to the food remittance plan already in operation. By this system remittances were sold at \$20, for which a standard package of clothing was delivered to the designated person in Russia. Up to 1 Aug. 1922 the American Relief Administration had shipped into Russia over 750,000 tons of American food, seeds, medical supplies and clothing. For the transportation of these supplies from the ports to internal points in Russia it has used over 40,000 Russian cars.

The funds supporting this operation, which amounted to approximately \$60,000,000, have been derived from the following sources: An appropriation by the Congress of the United States, 24 Dec. 1921, of \$20,000,000; a Congressional authorization for the use of surplus United States Army medical supplies valued at \$4,000,000; an appropriation from the Soviet government for the purchase of seed in the United States of \$11,433,000; an allocation from the American Red Cross for the medical program of \$3,600,000; donations from the American Jewish Joint Distribution Committee for general relief of approximately \$5,000,000; the balance of \$15,967,000 was contributed by co-operating organizations or by individual gifts from the American people. In carrying on its relief program in Russia the following organizations have co-operated with the American Relief Administration under this agreement with the Soviet authorities: The Mennonite Central Committee, the American Friends Service Committee, the National Catholic Welfare Council, Southern Baptists, International Committee of the Y. M. C. A. and Y. W. C. A., Federal Council of Churches of Christ in America, National Lutheran Council, Volga Relief Society. Due to a general improvement in conditions the American Relief Administration had by the beginning of 1922 discontinued its relief work in all Central European countries except Hungary, Poland and Austria. Conditions warranted the withdrawal from Hungary in February, and after the first of June organizations subsidized by the governments of Poland and Austria carried on the child-feeding work in these countries. By means of special funds donated for the purpose, relief was given during all of 1922 to large numbers of intellectuals in Poland and Austria through the American Relief Administration. From similar funds relief was extended by the American Relief Administration to refugees in Constantinople from July 1922.

The Administration's headquarters are located at 42 Broadway, New York City. Herbert Hoover is the chairman.

AMERICAN UNIVERSITY, a Methodist Episcopal co-educational institution, founded in 1893 and located at Washington, D. C. In 1922-23 it had a faculty of 35 members, 230 students, property valued at \$2,500,000 and an income of \$70,000. Lucius C. Clark is chancellor.

AMHERST COLLEGE, a non-sectarian educational institution for men, founded in 1821, and located at Amherst, Mass. In 1922-23 it had a faculty of 51 members, 535 students, property valued at \$7,750,000 and an income of \$460,000. Alexander Meiklejohn, LL.D., is president.

AMMONIA, Manufacture of. See METALLURGY.

AMMUNITION. Perhaps the most interesting feature connected with the manufacture of ammunition during the past year or two was the announcement made late in January 1923 to the effect that experts of the Army of the United States had developed a new bullet for use in rifles and machine guns, which is expected to add enormously to the effectiveness of those weapons. This new bullet is called the "boat-tail" because of a six-degree taper at the tail. The announcement stated that tests at the Army

Infantry School had fixed the range of the new bullet at 4,800 yards, as compared with 3,450 yards, the maximum range of the ammunition which the army had been using. In many other respects, it was stated, this new bullet is superior to the old type. Inasmuch as the Army had on hand at the beginning of the year a large quantity of rifle ammunition left over from the World War, this, it was stated, will be used up before boat-tail bullets are manufactured in large quantities.

In his report for 1922 the Secretary of War stated that the manufacture of an experimental lot of 4,000-pound demolition bombs had been completed, and that tests indicated that this bomb will be as satisfactory as was the 2,000-pound bomb used during 1921. Development tests of modified types of 100, 300, and 600 pound demolition bombs and a new type of 1,100-pound demolition bomb were completed and the types approved by the War Department for issue to the service. Development tests of new types of 100, 300, and 600 pound demolition and of fragmentation bombs were made for the purpose of establishing basic designs for this matériel. Extensive development tests of incendiary and smoke bombs were undertaken in co-operation with the Chemical Warfare Service and the Air Service. In addition to the usual proving-ground tests, tests were conducted, in September 1921, against the battleship *Alabama* using incendiary, smoke, gas, and demolition bombs. The 2,000-pound demolition bomb repeated its success in previous maneuvers by sinking the *Alabama* in less than one minute.

Under date of 3 Oct. 1922, the Department of Commerce issued a report in which it was stated that 26 establishments engaged in the manufacture of ammunition in the United States during the year 1921 turned out products valued at \$32,262,754, as compared with products valued at \$88,038,223 turned out by 42 establishments in 1919, a decrease of \$55,775,469, or 63.4 per cent.

Artillery ammunition manufactured in 1921 was valued at \$1,307,533, as compared with a valuation of \$15,881,490 placed upon the artillery ammunition manufactured in 1919. Small arms ammunition manufactured in 1921 was valued at \$20,716,808, as compared with \$37,649,811, the value of the small arms ammunition manufactured in 1919. The item "small arms ammunition" includes cartridges, paper shells, percussion caps, primers, etc. Blasting and detonating caps manufactured in 1921 were valued at \$2,911,833, compared with \$2,630,365, the value in 1919.

ANALYTICAL CHEMISTRY. See CHEMISTRY.

ANATOLIA, the purely Turkish portion of the Turkish state. See TURKEY.

ANCON, Treaty of. See PEACE AND ARBITRATION, INTERNATIONAL.

ANGLO-JAPANESE ALLIANCE. See WASHINGTON CONFERENCE.

ANGOLA, or Portuguese West Africa, a colony of Portugal on the west coast of Africa, bounded by the French and Belgian Congos, the Union of South Africa and the former German Southwest Africa. Its boundaries have been settled by several conventions. It has belonged to Portugal since 1575 with the interval of seven years' occupation by Holland in 1641-48.

The area is about 485,000 square miles with a population estimated at 2,124,361. The capital is Sao Paulo de Loando. Other large towns are: Cabinda, Ambriz, Novo Redondo, Benguella, Mossamedes and Port Alexander. There is a military force of about 4,000, mostly native. The colony is administered by a High Commissioner, resident at Loando, and who is vested with large powers. The chief products of the colony are coffee, rubber, wax, sugar, vegetable oils, cocoanuts, ivory, oxen and fish. Tobacco is grown for local consumption. Petroleum and asphalt deposits are operated by a British syndicate. There are large quantities of malachite, copper, iron and salt. Gold has been found. The chief imports are textiles and the chief exports are coffee and rubber, although the supply of the latter is being rapidly exhausted. The external trade of the colony is valued at 30,000,000 escudos, about equally divided between exports and imports. The revenue for 1922 was 53,507,000 escudos and the expenditures 53,537,000 escudos. There are 818 miles of railway. The trade of the colony is mostly with Portugal.

ANGORA, Treaty of. See NEAR EAST.

ANGOUMOIS GRAIN MOTH. See ENTOMOLOGY, UNITED STATES BUREAU OF.

ANHALT, officially Freistaat Anhalt, a free state of Germany, formerly a duchy of the German Empire, bounded by the Prussian provinces of Saxony and Brandenburg. The free state has an area of 888 square miles and a population of 331,258. The capital, Dessau, has a population of 57,658. The population is mostly Protestant, there being but 12,755 Roman Catholics and 1,483 Jews. The state income and expenditures balanced in 1921 at 62,285,300 marks. The public debt amounts to 68,765,266 marks. The executive power of the free state is vested in a State Council of five members, the chairman of which bears the title of President. The Diet members are elected for three-year terms according to the Constitution adopted in 1919.

ANIMAL DISEASES. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF.

ANIMAL HUSBANDRY. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF.

ANIMAL INDUSTRY. See AGRICULTURE IN THE UNITED STATES; ANIMAL INDUSTRY, BUREAU OF.

ANIMAL INDUSTRY, Bureau of. The Bureau of Animal Industry of the United States Department of Agriculture was organized in 1884 for the immediate purpose of suppressing contagious diseases of animals and promoting foreign trade in the same. The control and eradication of animal diseases has continued to be one of the most important functions of the Bureau, although its powers have from time to time been greatly enlarged so that the major activities now include: Administration of the Federal meat inspection; breeding, feeding and management of livestock and poultry; work for the betterment of dairy and allied industries; and numerous lines of laboratory and research investigations, some of which have been epoch making, as the discovery of disease transmission by indirect means (carriers), and the pro-

tective serum against hog cholera. The Bureau had 4,241 employees on 30 June 1922.

Following is a brief outline of the animal-disease situation at the end of the fiscal year 1922: The United States is entirely free from the following contagious animal diseases which exist in various parts of the world: African horse sickness, foot-and-mouth disease, lymphangitis (ulcerative and epizootic), mal de caderas, cattle farcy, nagana, pleuropneumonia, rinderpest and surra. The majority of diseases mentioned have been excluded by quarantine measures; a few, such as foot-and-mouth disease and pleuropneumonia, were formerly present but were eradicated by slaughter and disinfection.

The following contagious animal diseases occur to a limited extent, are not so serious as formerly and may be controlled or prevented by scientific methods: Anthrax, blackleg, dourine and glanders.

The following contagious diseases still exist in the United States and affect livestock to a considerable degree: Hog cholera, tuberculosis, Texas fever, contagious abortion, cattle scab and sheep scab. Hog cholera may be controlled with assurance by the use of the serum treatment. Tuberculosis may be detected with reasonable certainty by the proper application of tuberculin tests; there are several forms of tuberculin tests which may be used alone or in combination. Contagious abortion is controllable by sanitary measures combined with proper herd management. Cattle scab and sheep scab have been eradicated almost entirely from the country at large, but these diseases are still serious in limited areas. Eradication of cattle ticks is effectively brought about by systematic dippings of ticky cattle in arsenical solutions. Each year the tick-infested territory is reduced in extent and the practical completion of the work is probable within a few years.

An outline of the principal activities of the Bureau of Animal Industry during the fiscal year 1922 gives further information on progress in the fields mentioned and describes other work of the Bureau.

Magnitude of the Livestock Industry.—The scope of the Bureau's operations is indicated by the numbers of farm animals in the country, as estimated for 1 Jan. 1923. Horses and mules, 24,359,00; cattle, 66,352,000; sheep, 37,209,000; swine, 63,424,000. These are owned by approximately 6,000,000 farmers. The Bureau's efforts are concerned in the welfare of all these animals and of the owners, as well as of the varied industries connected with the raw products derived from the animals.

The direct work of the Bureau, it may be remarked, is supplemented by educational activities, principally through publications, motion pictures and exhibits.

Tuberculosis Eradication.—The Tuberculosis Eradication Division of the Bureau, in co-operation with the various States, supervises the work of ridding cattle of the scourge of tuberculosis, which is also a menace to the public health. During the year 2,384,236 cattle were tested, of which 82,569, or 3.5 per cent, were condemned as diseased. There were at the end of the year 16,216 accredited tuberculosis-free herds, containing 363,902 cattle, and in addition

161,533 herds, containing 1,548,183 cattle that passed one test preliminary to being accredited.

Hog Cholera.—The Division of Hog Cholera Control co-operated during the year with 32 states in the work of combating cholera. This disease continues to be the most serious menace to the swine industry, there being an estimated loss during the year from this cause of 2,774,000 hogs. A total of 1,401 infected premises were quarantined or carded, 439 places were cleaned and disinfected.

Animal Husbandry Division.—The year's work of the Animal Husbandry Division included investigations in animal genetics; numerous breeding and feeding experiments in co-operation with State institutions; studies of range sheep and wool production; and breeding and feeding investigations with poultry and pigeons. The division certifies to all imported animals that enter the country for breeding purposes. The experiment farm at Beltsville, Md., is used as a practical laboratory and proving ground for solving livestock problems. Beef-cattle work was conducted in 13 different States, and records kept of approximately 20,000 experimental animals. Most of the work with swine is carried on at the Bureau farm, there being about 500 hogs and pigs representing six principal breeds. The work includes slaughter tests and curing experiments. Sheep and goat investigations include about 4,000 sheep of various breeds owned by the Bureau. The work included laboratory studies with various grades of wool. Breeding and feeding of utility horses is in progress in Wyoming (50 animals), and of Morgan horses (56 animals) in Vermont. Poultry breeding and feeding experiments are conducted on a large scale at the Bureau farm and at Glendale, Ariz.

Dairy Division.—The principal activities of the Dairy Division during the year included:

Studies of cow-testing-association records, involving 21,234 cows, for the purpose of determining best dairy-herd methods; educational work in the interest of milk utilization; studies of creamery records and assistance to new creameries in planning and installing equipment. The division has for seven years supervised the operation of the Grove City Creamery, Grove City, Pa., in which large quantities of butter and several kinds of cheese are manufactured.

Studies in the use of milking machines; silage flavors and odors; manufacture of ice cream; utilization of skim milk, buttermilk and whey; and statistics of foreign and domestic dairy products; supervision of manufacture of butter for the navy; inspection of renovated-butter factories; the dairy research laboratories conducted a large amount of work in nutrition of cows and in the bacteriology and chemistry of milk.

Meat Inspection Division.—The slaughter under Federal meat inspection in the fiscal year 1922 totaled 63,196,241 animals. These consisted of 7,871,457 cattle; 3,924,255 calves; 11,968,434 sheep and lambs; 39,416,439 swine; 13,758 goats and 1,898 horses. Of these 240,071 animals or carcasses were condemned, and 867,221 parts of carcasses. The inspection includes all products that are subsequently cured, canned, etc. Imported meat is also closely in-

spected. Total imports for the year were 41,913,496 pounds, of which 12,411 pounds were either condemned or refused entry.

Field Inspection Division.—The Field Inspection Division conducts work for the eradication of scabies of sheep and cattle and dourine of horses. It supervises the interstate movement of livestock to prevent the spread of disease, and inspects and quarantines, when necessary, all imported animals and hides, wool, straw, etc., which may carry infection into the country.

During the year 8,869,386 sheep and 453,708 cattle were dipped for scabies. In interstate transportation 18,475,991 cattle, 20,462,270 sheep, and 10,085 horses and mules were inspected, and 39,044 cars were cleaned and disinfected.

Cattle-tick Eradication.—The division in charge of this work reports territory released from quarantine in the fiscal year 1922, totaling 29,563 square miles. Seventy-two per cent of the total of 729,852 square miles in the South that were originally infested are now free from the tick. During the year 31,148 cattle-dipping vats were in operation.

Pathological Division.—The Pathological Division conducts scientific investigations of animal diseases, the testing of biological products manufactured under Federal control and the study of plants poisonous to livestock.

Research work during the year included: Infectious abortion, botulism, swine erysipelas, diphtheria antitoxin, rat viruses, changes in meats, etc.

Biochemic Division.—A large part of the work of the Biochemic Division is concerned with hog cholera. Considerable study was also given to the so-called "hog flu." Research work on meat products included a study of the composition and nutritive value of the edible viscera and investigations into composition of flesh of emaciated cattle and of rancidity in fats.

Zoological Division.—The year's work of the Zoological Division on parasitic diseases of animals included methods of controlling roundworms of sheep and hogs and treatment of ox warbles, external parasites of hogs, horse mange and sheep scab.

An important discovery was made by this division in the use of carbon tetrachlorid as a remedy against various worms in animals and human beings.

Division of Virus-Serum Control.—The manufacture of veterinary biologics is supervised by the Division of Virus-Serum Control, which issues licenses to manufacturers and inspects the products. The commercial production of hog-cholera serum and virus during the year totaled close upon 1,000,000,000 cubic centimeters.

Miscellaneous Work.—The Experiment Station of the Bureau at Bethesda, Md., performs veterinary research work. Of special importance are the new investigations concerning contagious abortion and tuberculosis. Other work includes tests of tuberculin and dairy products purchased on the open market. Large numbers of small experiment animals are annually raised.

JOHN R. MOHLER,
Chief, Bureau of Animal Industry.

ANIMAL PESTS, Extermination of. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF.

ANIMALS, Farm. See AGRICULTURE IN THE UNITED STATES.

ANIMALS, Inspection of. See ANIMAL INDUSTRY, BUREAU OF.

ANNAM. See FRENCH INDO-CHINA.

ANSON, Adrian C., American baseball player: b. Marshalltown, Iowa, 17 April 1852; d. Chicago, Ill., 14 April 1922. One of the great figures of baseball history, "Pop" Anson, as he was affectionately known to thousands of the followers of the national game, grew up with baseball, for when he first engaged in it the sport was just emerging from the old game of rounders. The first team he played on was a sort of family affair, his father being a member thereof. He entered Notre Dame University in 1866, and there was considered as good a student as he was ball-player. He made the college team in his first year, and though an active player in any position, did not impress anyone with his chances of becoming one of the immortals of the game. His first important engagement was with the Forest City team of Rockford, Ill., a semi-professional organization. His position at that time was undetermined, for he played both third base and left field. In 1872 Anson obtained his first professional engagement with the Philadelphia Athletics of the National Association, with which organization he remained four years. While with the Athletics, in 1874, he accompanied the team to England and in a cricket match with the All-Ireland eleven had the distinction of making the highest score. At this time he formed a close friendship with the late A. G. Spalding and through the latter's influence he left Philadelphia and signed as regular third baseman with the Chicago team of the newly-founded National League. In that year, 1876, he played third base and was a large factor in bringing the first National pennant to Chicago. Spalding was the leader of that famous aggregation of players, but he soon resigned and Anson took his place. While leader he won five pennants for Chicago, those of 1880, '81, '82, '85 and '86. In those years the name and fame of Anson were at their height. He was soon to learn the fickleness of the followers of the game, for as soon as his playing fell off and the team dropped from its leading position in the league his popularity waned. Some of his friends counseled him to leave the playing field for the bench, but he would not and continued to play for 21 of the 22 years he was with Chicago. In 1897 when his contract expired it was not renewed. He was next signed with the New York Giants by the late Andrew Freedman, but his term as manager there lasted only a few weeks, he being unable to work amicably under Freedman's dictation. His retirement from organized baseball followed, after which he tried several ventures; a billiard hall proved a success, but a "semi-pro" team he organized to tour the country was a flat failure. He was city clerk of Chicago for one term and failed of re-election. He also achieved some success with a vaudeville act. He kept up his athletics

all the time, taking up golf when no longer able to wield a baseball bat. Anson's name stands high on the baseball roll of fame: From 1876 to 1897, his batting average was over the .300-mark, and in 1887 reached the record for that time of .421. He led the league in batting six times, and in several seasons was in second or third place. His fielding average ranged from .974 to .988. In 8,947 times at bat he made 1,665 hits, and out of 22,945 fielding chances accepted, he missed only 596.

ANSTICE, Henry, American Episcopal clergyman: b. New York City, 7 Oct. 1841; d. on train from Montclair, N. J., to New York, 18 Dec. 1922. He was graduated from Williams College with honors in 1862 and from the Philadelphia Divinity School in 1865 and ordained the same year. He was rector of Saint Barnabas', Irvington, N. Y., and then of Saint Luke's, Rochester, for 31 years. His next charge was Saint Matthew's, Philadelphia, where he remained for six years. The connection of Dr. Anstice with the triennial General Convention of the Episcopal Church began in 1865 and lasted for 57 years, ending at the last meeting held in Portland, Ore., in September, 1922. From 1877 to 1904 he was first assistant secretary of the House of Deputies, and from 1904 until September 1922 he was the secretary. He had attended 19 triennial conventions of the Protestant Episcopal Church, and during the 57 years of his association every bishop now living had been consecrated. At the time of his death he was financial secretary and treasurer of the Clergyman's Retiring Fund and vice-president of the American Church Building Fund Commission. He was an overseer of the Philadelphia Divinity School. The degree of D.D. was given to him in 1875 by the University of Rochester.

ANTHRAX. The name of a disease occurring epidemically among herbivora, chiefly cattle and sheep, and occasionally affecting man. It is also called malignant pustule, splenic fever and wool-sorters' disease. It is caused by a rod-shaped bacterium, the *Bacillus anthracis* first seen in 1849 and isolated in 1863.

Within recent years there was formed the International Advisory Committee on the Prevention of Anthrax, made up of members from England, India, Australia, South Africa, Italy, Sweden, Germany, France and Belgium. The object of this committee is to secure the adoption of protective measures in various countries and to find better methods of disinfecting wool, hides, skin and hair, all of which are classed among the so-called anthrax carriers. England has taken steps to protect her wool workers by putting up a large disinfecting plant at Liverpool at a cost of \$750,000. To treat wool by this process costs approximately three cents per pound. So far, no effective method has been devised for disinfecting hides and skins that is not injurious to these articles.

In the United States, according to the Department of Agriculture, the number of deaths of persons from anthrax contracted in places where it might have been prevented by disinfection is comparatively small. During the eight years up to and including 1917, 222 deaths from this disease were reported. Only 25 to 30 per

cent of these were among persons such as wool workers and tannery employees, who might have been protected by treating the raw materials. Farmers and dock workers, who handle wool, hides and hair brought into the country, cannot be protected in this way. About 20 per cent of the deaths referred to occurred among farmers who, in most cases, contracted the disease as the result of skinning animals which had died of an ailment at the time unknown. Farmers are advised by the Department of Agriculture not to attempt to salvage the hides of animals dying from unknown causes.

Occasionally newspaper articles have told of men who contracted anthrax through the medium of the shaving brush. As brushes made of horse hair are said to be the most dangerous, brush manufacturers have voluntarily agreed to use no more horse hair in making shaving brushes.

At a meeting of the International Advisory Committee on the Prevention of Anthrax, held in London late in 1922, it was decided that the English method of disinfecting wool is satisfactory, but that all the countries concerned should endeavor to develop a method of disinfecting hides and hair not injurious to those articles. The Committee also recommended the compilation of a list of countries from which wool, hides, hair and similar products may be imported without the necessity of disinfection. See VETERINARY MEDICINE AND SURGERY.

ANTHROPOLOGY. Interest in man's origin and his early career is universal among the enlightened nations and though there were no such startling discoveries during 1922 as in the preceding year yet steady progress was made, particularly in the New World, where the United States leads in the number of institutions specializing in such research. Systematic explorations were maintained during the year by 19 museums supporting in all 23 separate field projects. The policy of these institutions has been one of co-operation rather than rivalry, each taking special areas as its objective and continuing the work therein year after year. Thus, the American Museum of Natural History in New York City is giving attention to the archaeology of New Mexico, the ethnology of Alaska and the racial anatomy of the Pacific Islands; the Field Museum of Natural History in Chicago is occupied with the ethnology of Borneo and the archaeology of China and Colombia, South America, respectively; the Bureau of American Ethnology, Washington, D. C., is giving attention to the ethnology of Indian tribes in Southwestern United States, the remaining Algonkian tribes of Eastern North America, and to the archaeology of the Mesa Verde area in Colorado; the United States National Museum is working out the ruins in the famous Chaco Canon, New Mexico; the Carnegie Institution of Washington is investigating the remains of Maya culture in Guatemala and in Yucatan; the University of Pennsylvania Museum continues its exploration of the Amazon area in South America; the Bishop Museum in Honolulu, now affiliated with Yale University, specializes in Polynesian problems; while the remaining institutions in the list have for

the most part given attention to localities within the bounds of their respective States.

While, as stated, by far the greater number of institutions engaged in such research are found within the United States, there are, however, a number of institutions in other American countries. Thus, the Dominion of Canada maintains a Division of Anthropology in conjunction with its Geological Survey, confining its attention to the problems within its own territory, three separate field units having been undertaken in 1922. In Mexico the government supports a department for both archaeological and ethnological research and for the protection of important ruins and monuments. During the year 1922 this department carried on important investigations near the City of Mexico. A few other Latin American countries support similar departments.

A general review of all these research enterprises indicates that the emphasis during the year was upon archaeological problems, particularly upon questions of relative age, or time sequence. Yet, the ideal procedure for the final establishment of time-relations is the intensive study of a single ethnographical area applying all three of the traditional methods of the science, namely, racial anatomy, archaeology and ethnology. The single current investigation that approximates this ideal is the Bayard Dominick Expedition of the Bishop Museum in Honolulu, the results of which as reported, establish two anatomical racial types for the Islands of the Pacific, now fused and forming the native population: (a) a tall, rather long-headed, light brown type; and (b) a shorter, rounder-headed, dark-skinned type; in culture, there are also two types: (a) the basic Polynesian culture characterized by stone boiling, bark cloth, tattooing, agriculture, etc., while overlying this is the second culture (b) characterized by organized government, rigid, social distinctions, sacredness of rulers, etc. Finally, such archaeological investigations as have been made by the members of this expedition bear out the above distinctions, thus clearly indicating two separate migrations into the Pacific. The sources from which these two streams of population came are placed within the bounds of the great East Indian archipelago, now occupied by Malay peoples.

Another notable advance in our knowledge of time-relations has been made in Southwestern United States where the American Museum of Natural History, the National Geographic Society of Washington and the Peabody Museum of Harvard University have concertedly dealt with the dating of cliff-houses and other ruins. The most strategic step in this work is the adaptation of the Prof. A. E. Douglas tree-ring method to the dating of such ruins as contain logs. By this method it is now possible to assign satisfactory dates to many of these ruins. Another important step has been taken by the American Museum of Natural History in the dating of archaeological remains found in caves, this investigation being directed particularly to the perfecting of a technique for the dating of stalagmite formations. The new methods used in this work have been devised by Dr. Vernon C. Allison of Pittsburgh, Pa.

Turning now to the Old World we note that in England interest centers in the intensive study of the early remains of man, particularly the Rhodesian skull from South Africa and the long-known Piltdown example from England. From the minute studies of these specimens, chiefly at the hands of Elliot Smith and Smith Woodward, it appears that the most distinctive types of man can be arranged in an ascending scale, beginning with *Pithecanthropus Erectus*, or the man of Java, next the Rhodesian man, then the Piltdown, thus bringing us by successive steps to the Neanderthal, and lastly to living European races. From a study of the brain casts for these types it appears that the lateral portions of the brain, seemingly the most intimately connected with the functions of hearing and speech, represent the initial expansions in the anthropoid brain eventually resulting in the modern type of human brain and head.

In France and other parts of Western Europe the minute study of cave and shelter deposits has been resumed with vigor, but while a number of new sites have come to light, nothing has been reported that tends in any way to modify the accepted chronology of early man in Europe. Plans are maturing, however, for the systematic study of early archaeological remains in Eastern Europe and the adjoining parts of Asia, where it may be assumed lies the key to man's origin.

Returning to a general view of the science of anthropology as a whole it should be noted that attention is focused upon racial problems also. In America, in particular, increasing interest is shown in the biological and cultural problems arising in questions of national aspiration and the migrations of peoples. Consequently, the attention of anthropologists is now centering upon such problems as fall under the heads of heredity, race mixture and mental constitution. Prof. R. B. Dixon of Harvard, is just completing an exhaustive synthetic study of the chief races of the world and by a method of correlation, showing the relative proportions for such characters, as head length, face width, etc., arriving finally at the identification of a few world types of man, which in remote ages, by isolation or otherwise, became sharply differentiated and sufficiently stabilized to form the known living varieties by varying degrees of compounding. How satisfactory or convincing this interpretation of facts may be, remains to be seen, but the publication of these results will mark a distinct step in our comprehension of races. The other line of approach to this problem is through studies of growth and development in children, the most promising investigation being that of Prof. Franz Boas of Columbia University, demonstrating distinct time periods in the development of Jewish children as contrasted with children of old North European stock. Further, a number of States have established child welfare bureaus similar to that conducted by the University of Iowa under the directorship of Prof. Bird T. Baldwin which has during the current year pursued similar investigations upon very young children. Mention should also be made of an intensive survey of the various racial groups, pure and mixed, found in the public schools of Honolulu, the results

of which are now being prepared for publication by Dr. Louis R. Sullivan. To this could be added a long list of minor researches bearing upon the various problems concerned. But we see in these investigations a phase of the increasing recognition of the importance of anthropology in the administration of governmental responsibilities at home as well as abroad. It is notable that an increasing number of students are registering in university courses in anthropology and that efforts are being made to adequately finance new researches in this field. Unfortunately, the personnel of the science suffered a distinct loss during the year by the death of Dr. W. H. R. Rivers in England and James R. Mooney in the United States, both distinguished for their important contributions to ethnology.

CLARK WISSLER,

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ANTIGUA. See LEEWARD ISLANDS.

ANTIMONY. Metallic antimony is used chiefly in alloys with other metals, as in type metals, babbitt or bearing metal, Britannia or white metal, and antimonial or hard lead. The antimonial oxides are used for making white enamel and the oxides and sulphides as coloring agents and paint pigments. New uses are gradually being found. The field of use for the compounds, especially the oxides in paint, is rapidly widening.

The United States uses annually about 2,000 tons of white oxides and 1,200 tons of the sulphides, including vermilion and other colors. The world's annual peace-time consumption of antimony from ore produced, not including antimonial lead ores, is said by the United States Geological Survey to be about 22,000 metric tons, while the United States consumes about 10,000 tons. This country also uses annually about 2,100 tons of virgin antimony contained in domestic antimonial lead and 3,500 tons of secondary antimony recovered from alloys, scrap and dross, making a total of 15,600 tons.

Up to the close of 1921, no antimony ore had been produced in the United States since 1918. From 1915-18 inclusive, 10,750 short tons of antimony ore, containing 4,310 tons of metal, were produced in the United States. Metal antimony produced at smelters in 1917 and 1918 was 385 short tons from domestic ores and 4,672 tons from foreign ores. A small quantity was produced in 1919 and 1920, but the Geological Survey stated in its report that it was not at liberty to publish the figures. In 1917, the last year for which complete figures are available the world production of antimony totaled 57,764 metric tons, antimonial lead ores not included. Most of the world's supply of antimony is produced in Mexico, Argentina, Bolivia, Peru, France, Italy, China, Algeria and Australia.

At the beginning of 1921, the average quoted price of antimony was 4.96 cents a pound, compared with 8.49 cents a pound in 1920. For medicinal uses of antimony see MEDICINE AND SURGERY, ADVANCEMENT OF.

ANTIOCH COLLEGE, a non-sectarian co-educational institution, founded in 1853 and

located at Yellow Springs, Ohio. In 1922-23 it had a faculty of 45 members, 375 students, property valued at \$394,561.95 and an income of \$107,000. Arthur E. Morgan, is president.

ANTITOXINS, Use of. See **MEDICINE AND SURGERY, ADVANCEMENT OF.**

APARTMENT HOUSES, Co-operative. See **CO-OPERATIVE MOVEMENT.**

APPLES. In its final report for the year, the United States Department of Agriculture estimated the 1922 apple crop of the United States at 203,628,000 bushels, or 31,090,000 barrels, compared with the 1921 crop of 99,002,000 bushels, or 21,557,000 barrels. No estimates of the value of the crop were given. The average price on 1 December was given as 99 cents per bushel, compared with an average of \$1.68 per bushel on 1 Dec. 1921. It is a fact, however, that in many communities apples could not be sold at a profitable price, and in many instances could not be sold at all. New York led in production with a total yield of 36,000,000 bushels. Washington was second, with a yield of 25,678,000 bushels. Michigan produced 11,850,000 bushels; Missouri, 9,400,000 bushels; Pennsylvania, 11,400,000 bushels; Virginia, 8,360,000 bushels; Illinois, 9,720,000 bushels; California, 7,656,000 bushels; Oregon, 6,300,000 bushels; Idaho, 3,900,000 bushels; Colorado, 4,250,000 bushels; Kentucky, 5,070,000 bushels; Tennessee, 4,250,000 bushels; West Virginia, 5,625,000 bushels; North Carolina, 5,570,000 bushels; Iowa, 4,410,000 bushels; Kansas, 3,280,000 bushels; Georgia, 1,135,000 bushels; Massachusetts, 3,010,000 bushels; Maine, 1,250,000 bushels; Alabama, 1,098,000 bushels; Texas, 2,640,000 bushels; Utah, 1,085,000 bushels; Maryland, 1,800,000 bushels; Connecticut, 1,300,000 bushels; Oklahoma, 1,140,000 bushels; Arkansas, 2,400,000 bushels, and Minnesota, 1,020,000 bushels. New York's crop was more than two and one-half times the size of its 1921 crop. Massachusetts' crop was approximately three times its 1921 crop. Ohio's crop was about double its 1921 crop. Michigan's crop was about three-fourths larger than its 1921 crop, while Maine's crop was less than one-third of its 1921 crop, and Washington's crop was over 3,000,000 bushels under its 1921 crop. According to the records of the Department of Commerce, the exports of apples from the United States during the first 11 months of 1922 totaled 2,642,492 boxes, valued at \$6,312,629, plus 481,319 barrels, valued at \$2,319,105. See also **AGRICULTURE IN THE UNITED STATES.**

ARABIA, the great peninsula of southwestern Asia, stretching from the Red Sea to the Persian Gulf and from Syria and Mesopotamia to the Gulf of Aden. The total area is about 1,200,000 square miles with a population variously estimated at from 5,000,000 to 6,500,000.

Large areas of the peninsula are desert and steppe, occupied by Bedouin tribes and other nomads. There are many tribal communities which enjoy semi-independence. On the oases and coastal regions there are settled communities under eight independent systems of government.

Kingdom of the Hejaz.—The kingdom which attained its independence of Turkey during the war has an area of 170,000 square miles, and a population of 900,000. Its territory

stretches from the Gulf of Akabah to El Lith, about 100 miles south of Mecca, and inland about 100 miles. Within its confines are the holy cities of Mecca and Medina. The former city is the capital of the kingdom. The chief product of the kingdom is dates. Hides, wool and gum are exported but trade has declined since the war. Foodstuffs and building materials are the chief imports of the kingdom. The revenue is derived chiefly from customs dues at the ports and from the British subsidy paid to the king to help maintain his independence.

Nejd and Hasa, Emirate of.—This Arabian principality has its capital at Riyadh. It has a population of about 300,000. Dates, textiles, hides and livestock are exported from Hasa but Nejd produces nothing for export. The reigning Emir, Abd el-Aziz es-Saud, expelled the Turks from Hasa in 1913 and is extending his influence in the region of the Persian Gulf.

Jebel Shammar, Emirate of.—This principality lies to the north of Nejd, in which it was once included, its independence dating from about 1850. Hail is its capital. There is intermittent warfare with its southern neighbor, Nejd. The estimated population is 200,000. The reigning Emir is Abdullah ibn Mitah. The emirate produces nothing for export and everything save the commonest necessities are imported.

Asir, Principate of.—This state is situated on the west coast of the peninsula between Nejaz and Yemen. Sabiyah is the capital. The estimated population is 1,000,000, many of whom do not acknowledge the rule of El Idrisi, the ruler of the principate. Hides and livestock are the chief exports. This trade is largely with Eritrea.

Yemen, Imamate of.—This state has an area of 75,000 square miles and an estimated population of 1,000,000. Sanaa is the capital and Hodeida the chief port. Cereals and coffee are successfully grown. Coffee is the chief article of export, closely followed by hides. The reigning Imam is Yahya Mohammed Hamid ed-Din. Other states of the Arabian Peninsula are the British Protectorate of Aden (q.v.); the Sultanate of Oman (q.v.); the Sultanate of Kuwait, on the northwestern coast of the Persian Gulf, the sultan of which is subsidized by the British government. The estimated population is 50,000; the Emirate of Kerak in Transjordan, ruled by the Emir Abdullah, second son of King Hussein of the Hejaz. The seat of his government is at Amman.

ARBITRATION, Industrial. See **INDUSTRIAL ARBITRATION.**

ARBITRATION, International. See **PEACE AND ARBITRATION, INTERNATIONAL.**

ARBITRATION SOCIETY OF AMERICA, organized 24 April 1922 by Moses H. Grossman, for the education of the people in the use of arbitration in personal matters instead of litigation. It is a fully empowered tribunal of justice, operating in New York City, for the speedy and inexpensive determination by arbitration of all controversies and differences save criminal and divorce cases. It is open alike to the general public and to the trades. Later it is to be extended to all the larger cities throughout the country. It endeavors to have enacted

a uniform arbitration law in all States of the Union, and to encourage the insertion of an arbitration clause in all trade and industrial contracts. It expects to greatly reduce the volume of litigation and to put an end to the seriously congested condition of court calendars, as well as to insure to the people a speedy administration of justice, and a saving of time and money. Disputants applying at this tribunal need but to agree to a settlement of their controversy by one or more arbitrators, selected by themselves or by the Society at their request.

Hearings involve no notoriety, no publicity, beyond the title of the case and the arbitrators award. These will appear upon the formal records of the court which confirms the award and enters judgment thereon.

It is the policy of the Society to encourage acquiescence on the part of the disputants in all the awards of the arbitrators, so as to obviate the necessity of entering a judgment; for only if the judgment is entered must the title of the case in arbitration and nature of the award appear in the formal records of the courts. The operations of the tribunal are marked by a total absence of technicalities. The controversialists are unlimited as to their choice of arbitrators. The procedure is simple and direct. The arbitrator designates a time for the hearing; the disputants then appear before him. Each disputant states his case in his own way, produces his witnesses, if any, and submits whatever documents are material. They are permitted to have the assistance of legal counsel at the hearing, if they so desire. Only a small charge is made by the Society, for the use of the court room and equipment, and for services in securing arbitrators. This money so collected is applied by the Society to the upkeep of the tribunal and to the extension of its work throughout the country. The Society receives no part of the arbitrator's fee.

The Society has its headquarters at 115 Broadway, New York City. At the end of February the office of president was vacant due to the death of Emerson McMillin. The other officers were: Vice-Presidents, Samuel McCune Lindsay, Moses H. Grossman; Treasurer, Jules S. Bache; Executive Secretary, J. W. Slaght; Secretary, J. Noble Braden.

ARCHÆOLOGY. The work of excavation and discovery of monuments of early civilization has not yet recovered from the effects of war. The Central European nations have not been able to give official subsidies to archaeological research, as in the pre-war period. Great Britain and the United States have usually left such undertakings to private initiative, and considerable progress is reported by the British and American societies which have been carrying on excavations in classical and Oriental countries. France and Italy, whose territories include so much of classic soil, also report various official and private archaeological work.

Egypt.—The expedition of the Egypt Exploration Society has continued researches at Tel el-Amarna. The house of the vizier, Nekht, discovered on this site, proved to be one of imposing dimensions. A river temple was discovered, containing reliefs of the period of Akhenaten, but showing evidence of occupation

as late as the 26th dynasty. Maru-Aten, the Precinct of the Disc, was excavated. Around a central artificial lake in this enclosure were once arranged trees and flower-beds and various buildings, some of which were elaborately decorated. The royal kennels contained the bones of greyhounds kept for the king. Prof. Flinders Petrie has conducted excavations at Abydos for the British School of Archaeology in Egypt. Here graves of the 1st dynasty and of later periods were found, and yielded a great variety of interesting small objects. To the 1st dynasty belong ivory tablets of King Zer, ivory figures of lions, used as gaming-pieces; seven inscribed stelæ, four ebony cylinder seals, aragonite vases and copper tools. Thirty inscribed stelæ of the Middle Kingdom and of later date were found. The relics of the New Kingdom include a papyrus of the Book of the Dead with painted vignettes of special interest. At Oxyrhynchus the great theatre and the colonnade were further examined. No Egyptian discovery in recent years has aroused such wide interest as the finding of the tomb of Tutankhamen in the Valley of the Kings, near Thebes, which rewarded a long search conducted by Lord Carnarvon and Howard Carter. A flight of rock-cut steps and a sloping passage led to a chamber which proved to contain tomb furniture of unusual splendor and interest, including an elaborate royal throne, carved and gilded couches, three chariots, pottery and alabaster vases, and stores of clothing and food. A hole in the wall of this room allows a glimpse of an adjoining chamber containing further treasures. At the present writing the excavators are about to open another room in which it is expected the royal sarcophagus will be found. Professor Reisner has continued excavations for the expedition of Harvard University and the Boston Museum of Fine Arts; but the results of the last campaign have not yet been reported.

The expedition of the Metropolitan Museum of Art in New York has continued operations on two important sites. At Lisht the pyramid precinct has been more thoroughly explored, yielding further evidence of burials of the Middle Kingdom, and of the village which later occupied the place. At Deir el Bahri, near Thebes, the area in front of the temple of Mentuhotep III has been cleared, and the elaborate plan of its fore-court, with its symmetrically planted trees, has been revealed. The foundation deposits of the temple were discovered. The excavation of a great tomb in the cliffs facing the avenue of approach to the temple led to the discovery of an interesting series of papyrus documents which had been left here, comprising accounts and letters relating to the property, business, and domestic affairs of Hekanakht, the ka-servant or official keeper of the great tomb.

Palestine and Syria.—Progress has been made in the organization of archaeological work in Palestine under the new Department of Antiquities constituted by the British authorities. A new law governing the excavation and disposal of antiquities has been drafted and has been approved by the Council of the League of Nations. The complete excavation of the ancient City of David on Mount Ophel has been proposed with the hope that archaeological

representatives of the several countries interested in the history of Palestine will take part in this work. It is hoped that the attention of scholars will also be turned to the rich archaeological treasures of the district known as Trans-Jordan. The new Palestine Museum at Jerusalem is now open to the public. By the will of the late Rev. James B. Nies the American school of Archæology at Jerusalem is to be provided with a new building including adequate accommodations for the director, the students, and the library. Doctor Nies died in Jerusalem while engaged in arrangements for the actual construction of the building. The American school made excavations during 1922 at Tel el-Fûl, three miles north of Jerusalem, on the site of ancient Gibeah. Doctor Albright, the director, has reported the discovery of the remains of successive mighdols or fortresses here, the first dating from the early Israelite period, the second from the time of Saul, the third from the royal period and the fourth from the Maccabæan Age. At Beisan the expedition of the University of Pennsylvania, directed by Dr. C. S. Fisher, has continued its systematic investigation of this site, and has reached not only monuments of the Roman period, but remains of an earlier date, showing a special Aegean influence. M. Virolleaud, director of the French Service des Antiquités in Syria, has reported the discovery of a subterranean tomb at Byblos, containing a great sarcophagus with alabaster and terra-cotta vases and objects of gold, silver, and bronze. Of special importance is an obsidian vase with two cartouches of Amenemhat III. An archaeological museum has been opened by the French authorities at Beyrouth.

Asia Minor.—Long interrupted operations at ancient Sardis were resumed in 1922 under the direction of Prof. H. C. Butler of Princeton University. The destruction of apparatus on the site made it impossible to conduct deep excavation on a large scale that year; but a considerable force of men were employed in archaeological prospecting and in bringing to light monuments which lay near the surface. Additions were made to the now considerable collection of Lydian inscriptions. Several tombs were opened, including one of the 4th century B. C., which was found intact, and a tomb of the 2d century of our era, which was decorated with frescoes representing flowers, fruits, and peacocks. A Christian lamp was discovered in this tomb. The most striking discovery of this season was a hoard of 30 gold staters minted in the period of Cræsus (about 540 B. C.), found in a grave which had collapsed and had thus escaped robbery in ancient times. Another interesting excavation was initiated on the site of ancient Colophon, under the joint auspices of Harvard University and the American School at Athens, and directed by Dr. Hetty Goldman. The discovery of many bronze coins of Colophon confirmed the identity of the site, which lies about 25 miles south of Smyrna. Outside the city walls are groups of tombs, some of which are to be dated in the 6th and 4th centuries B. C., while others are as early as the Mycenæan period. One well-built tomb of bee-hive shape was excavated. The upper strata on the acropolis are naturally of late date; but trial trenches have brought to light geometric pottery in the earlier deposits.

In the valley foundations of large structures, probably public buildings of Hellenistic date, were discovered. On the slopes of the acropolis are extensive remains of private houses, which are important as giving clear evidence of the plans of houses of an earlier date than are known on other classical Greek sites. The streets were paved with fitted stones or cobbles, and equipped with drain-pipes of terra-cotta. A bath of at least five rooms was partially excavated. The public square of the Hellenistic city was on the main terrace of the hill-side. Earlier buildings had been levelled to make room for this agora, which was surrounded with colonnades. A sanctuary of Cybele, with a propylon and a high platform for the image or altar, but without any actual temple, was discovered.

Greece.—In February 1922, Sir Arthur Evans again took up the excavation of the prehistoric site of Cnossos in Crete. Investigation of a village on a mountain slope a few miles from Cnossos revealed the fact that a minor residence or "summer palace" of the Cnossian kings was built where the village now stands. A circular well or reservoir, constructed of large and carefully shaped stones was discovered here. It was provided with a flight of steps which descended into the well, and with a drain pipe to carry off surplus water. On the site of the great palace at Cnossos, the southwest entrance, which was the state portal of the palace, was more thoroughly cleared. Operations in this quarter of the palace also showed that a flight of stairs ascended to a second story west of the central court, and it has been possible to draw a restoration of the facade of two stories facing on the court. Southeast of the palace two houses which had been ruined in the destruction of the Middle Minoan palace were excavated. It is clear that this destruction was caused by earthquake. Numerous fine examples of Middle Minoan pottery were discovered here. A curious feature of the palace site at the southeast angle is a pit whose floor is far below the ground level, and communicates with an artificial cave which may have been a den for lions. The existence of such a den, together with the tradition of Minoan bull-fighting, may have contributed to the growth of the legend of the Minotaur. Sir Arthur Evans, who for some years has been the actual owner of the site of the palace of Cnossos, has transferred the title of this property, together with his house, the Villa Ariadne, near the excavations, to the British School of Archaeology at Athens.

At Mycenæ a third campaign of excavation has been conducted by the British School at Athens. A bee-hive tomb, the so-called "Tomb of Aegisthus," was cleared, and proved to be of ruder construction than the famous "Treasury of Atreus" and "Tomb of Clytemnestra," which belong to the latest and most perfect stage of dome tombs. Excavation in the late Helladic cemetery (1500-1300 B. C.) which had been opened the year before yielded numerous small antiquities, including evidence of Mycenæan contact with Hittites and Egyptians, and a great deal of interesting pottery. It was clear that objects of value in these tombs had generally been removed in prehistoric times. On the acropolis further excavation brought to light the

plan of a propylon which showed a single column between antæ, recalling a common Minoan arrangement. At the head of the stairway which led to the official entrance of the palace was found a basement room belonging to an early period of the palace, and containing a square pillar which reminds archaeologists of the pillar rooms at Cnossos. A late Greek inscription found within the acropolis proves that Mycenæ was not completely destroyed in the 5th century B. C., but existed as a small but flourishing city in the 4th century and the Hellenistic period. The American School at Athens not only engaged in the excavations at Colophon described above, but continued its investigation of the prehistoric village at Zygouries, near Mycenæ. Here the potter's shop discovered the year before was more fully cleared. One room contained a large store of pottery, mostly craters of late Helladic date. A cemetery west of the village was discovered, and was found to contain burials of the prehistoric periods known as Middle and Late Helladic, and a number of shaft graves dating from the 4th century of our era.

In excavating for the construction of a garage in Athens two sculptured stones of exceptional historical and artistic interest were brought to light. Originally the bases of grave monuments of about 500 B. C., they had later been built into the wall of Athens in the hasty restoration of the city after the Persian invasion of 480. On one are represented groups of athletes and a unique scene in which a fight between a dog and a cat is supervised by two youths who hold the animals on leashes. The other stone shows two chariot scenes, and a game of hockey played by young athletes.

An event of signal importance not only to American scholars but to archaeological interests in general, has been the generous gift of Mr. Joannes Gennadius, for many years ambassador of the Hellenic government at the Court of Saint James, to the American School of Athens. Mr. Gennadius has presented to the school his unique library of Greek history, literature, and archaeology, illustrating these subjects in all phases and periods from prehistoric to modern times, and including not only many rare first editions, but historical manuscripts and thousands of photographs and engravings. This collection, which is to be accessible to the scholars of all nations, will be installed in a building to be known as the Gennadeion, on land adjacent to the present property of the American school. Funds for the erection of the building have been provided in the United States, and the Greek government has given the necessary land.

Italy.—A number of recent excavations in Italy have been first officially reported during the last year. Tombs have been opened at Vulci, long famous as an Etruscan site. On the northern and western slopes of the Alban hills, remains of several Roman villas have come to light. In a large hall of one of these buildings was a colossal statue of Artemis, whose head was a replica of that of the Hera Farnese. At Ostia the great granary, first built under Claudius, and twice repaired and altered, has been further investigated. A number of statues, including a charming figure of Artemis, of Amazon type, were found in the Forum of Ostia. A

unique and interesting discovery at Antium was that of a calendar of the pre-Julian period, painted in black and red on a plaster wall. It contains a 13th month, Merkedonius, which was inserted in every alternate year to make up the difference between the solar and lunar year. In the ruins of a villa at Gaeta a group of statues was found, including some portrait figures of the Augustan period, and two Nereids of Greek origin. On the Greek site of Caulonia in Southern Italy the remains of a temple built in the 6th century B.C. and repaired in the 5th have been discovered, and include some fine architectural terra-cottas. A Christian catacomb of the 5th century has been explored at Sant' Antoco in Sardinia, and has proved to be on the site of a Punic cemetery.

The following are among the archaeological publications of the past year: (Egypt) G. Auer and C. Siemens, 'König Echnaton in El-Amarna,' Leipzig; J. Capart, 'L'art égyptien, I, Architecture,' Brussels; A. Moret, 'Rois et Dieux d'Égypte,' Paris; W. Wreszinski, 'Atlas zur altägyptischen Kulturgeschichte,' Leipzig; (Asia) E. Chiera, 'Old Babylonian Contracts,' New York; G. Contenau, 'La civilisation assyriobabylonienne,' Paris; A. Stein, 'The Thousand Buddhas,' London; (Greece) L. D. Caskey, 'The Geometry of Greek Vases,' Boston; F. Courby, 'Fouilles de Delphes, II, Topographie et architecture,' Mâcon; G. F. Hill, British Museum, 'Catalogue of Greek Coins of Arabia, Mesopotamia, and Persia,' London; H. Lechat, 'La sculpture grecque,' Paris; W. K. Prentice, 'Greek and Latin Inscriptions in Syria,' Leyden; E. Pottier, 'Corpus Vasorum Antiquorum, I, Recueil général des vases du Louvre,' Paris; W. K. Prentice, 'Greek and Latin Inscriptions in Syria,' Leyden; M. Rostovtzeff, 'Iranians and Greeks in South Russia,' Oxford; E. Schmidt, 'Archaische Kunst in Griechenland und Rom,' Rome; S. Gsell, 'Inscriptions latines de l'Algérie,' Paris; J. Mothersole, 'Hadrian's Wall,' London.

SIDNEY N. DEANE,

Associate Editor, American Journal of Archaeology.

ARCHERY. The forty-second annual championship tournament of the National Archery Association of the United States was held at Cooperstown, N. Y., late in August 1922. Interest centered chiefly in the competition for the men's and women's championship titles, won in 1921 by J. S. Jiles, of Pittsburgh, and Miss D. D. Smith of Newton Centre, Mass., respectively. Miss Smith successfully defended her title at the 1922 tournament, turning in a score of 1,616 which was 234 points better than the score of Miss Norma Price of Boston, her nearest competitor. Fifteen women took part in the contest. Mr. Jiles lost his title to Dr. R. P. Elmer, who held the championship in 1914, 1915, 1916 and 1920. Owing to the World War, no tournaments were held in 1917 and 1918. Doctor Elmer's score was 2,488—296 points above the score of Mr. Jiles.

ARCHITECTURE. The year 1922 was ushered in with hope for a change from the unsteady, unsatisfactory conditions due to the complexities of readjustment after the World War.

In France alone during that period 250,000 buildings, including 1,500 schools, 1,200 churches and 377 public buildings, were destroyed so completely that restoration was impossible.

European nations throughout the war and during the chaotic financial and political situation following the armistice had little thought for architectural progress and throughout the world generally, the activities of the architectural schools were practically suspended. This suspension was a contributing cause for the lower standard in architectural design during the post-war period.

During the war period, prior to the entrance of the United States into the conflict, great activity was manifested in this country in connection with the various trades and industries supplying the needs of the warring nations. The constructions needed were purely utilitarian and scant attention was given to the architectural effect produced. After the entrance of the United States as a belligerent enormous activity was shown in this country in the development of utilitarian industrial plants with housing facilities for the large numbers of employees needed in the manufacture of war supplies. The pressing need of workmen gave to labor a great upward impetus. Great energy was concentrated in the building of ships, the supply on hand at our entrance into the war, being totally inadequate. To meet this need, large quantities of material and labor of every kind were utilized by the government and a ban was placed on all ordinary building operations amounting to more than \$2,500. The temporary buildings erected during this period by the government at the various cantonments were of little importance from the viewpoint of architectural design.

After the armistice, the building loan market was seriously affected by the greater attraction offered to investors by the foreign and domestic bonds. The negotiating of a building loan frequently required a bonus and other additional expenses not included in building finance in normal times. Building loans have been difficult to obtain since the war. As a result of these various contributing causes, architecture in common with other arts and professions had been neglected. At the beginning of 1922, it was on the threshold of a new era of progress.

In the larger cities of the country, the zoning laws had led to the development of skyscrapers along lines hitherto unthought of. To provide light and air, set-backs of the upper stories were necessitated and the height of the building bore a definite relation to the width of the street. It has been often stated and is commonly believed that architectural perfection cannot be attained in the design of these very tall buildings as the architectural styles forming the basis of their design were developed in the one-story temple of the Greek or Roman period or in the comparatively low building of the Renaissance. Nevertheless, as the result of the study of many of the American architects, a happy solution of this difficult problem can be anticipated, in fact has been in great part achieved. This is evidenced by the results obtained in the recent competition for the new Chicago *Tribune* building, which was participated in by American as well as foreign archi-

tecs, including, among others, John Mead Howells, of New York, who was awarded the first prize of \$50,000; Emil Saarnien, of Finland, who was awarded the second prize of \$20,000; Holabim & Roche, who were awarded the third prize of \$10,000, and 10 other architects of note, each of whom received honorable mention and a prize of \$2,000 for excellence of design.

The opportunity to design a building 400 feet high viewable from all sides is of rare occurrence. Mr. Howell's solution is epochal and is an architectural expletive in structural design. The dominant theme is that of a Gothic tower—the soaring, vertical sweep of whose accenting lines presents an aspect of towering uplift and militant strength. Significant of the higher reaches of the profession in America was the presentation to Mr. Thomas Hastings of the medal of the Royal Institute of British Architects. This occurrence prompted the following note: "An important part of our architectural history is founded on records of the two great firms, McKim, Mead and White, and Carrere & Hastings—the former following the influence of the Italian design and the latter French design as taught by Ecole des Beaux Arts—these two merged into an American character."

A chronology of the year's designs and builded products would be uninteresting—the general trend of the nation-wide accomplishment of the year's period is indicated in the characterization of the following: The preliminary study for the Masonic Temple at Detroit by Geo. Mason & Company, is predicative of the continuation of utility, good taste and enormous extent. The competition for the Elks National Memorial Headquarters Building at Chicago, Ill.; and the Telephone and Telegraph Building, New York, W. Bosworth, architect; New Hotel Statler, Buffalo, Geo. B. Post & Sons, architects; Municipal Auditorium, Colorado Springs, McLaren and Hetherington, architects; Standard Oil Building, New York, Carrere and Hastings, architects; great office building for the Aetna Life Insurance Company, Hartford, Conn.; Cadet Hospital, etc., for the Military Academy at West Point, N. Y., Arnold W. Brunner, architect; mammoth Hadley Apartment Hotel at Washington, D. C., Appleton D. Clark, Jr., architect; and redesigning of Number 1 Broadway, New York, W. B. Chambers, architect, with its novel maritime effect expressing the nature of the business conducted in the building.

With a continuation in this country of the progressive rate of building operations the year 1922 will stand as a most important period in the annals of the building industry in the United States. To its credit, 1922 records a total of about three and three-quarter billion dollars, or more than twice the construction expenditure of the year 1916, generally accepted as the prewar normal period.

Combining engineering and architectural activity the vehicular traffic tunnel, connecting New York City and Jersey City, with its under water construction and important approaches is a project of major importance. The tunnel will cost upward of \$30,000,000.

The general effect of war and its attending sentiment was crystallized in many of the monuments conceived and designed since the days of

the Armistice. Monuments large and small of various descriptions in different parts of the country in a measure show the outlet of the great patriotism that gripped the country as well as the gratitude of the American nation to its fallen heroes. The proposed Victory Hall, New York City, H. B. Herts, architect, crystallized the modern ideal in the composition of a World War monument. In a most happy and harmonious manner the essentials of monumental expression and productive utility are combined in this project.

Presenting patriotic imagery in a most successful manner is the Lincoln Memorial, Washington, D. C., Henry Bacon, architect. The design that has been developed for the flag room for the Capitol Building, Albany, N. Y., William de Leftwich Dodge, mural painter, has attracted notable comment. Here the State of New York aims to establish a decorative expression that shall portray the patriotic faith and love of the commonwealth in maintaining the greatness and glory of the American flag. The restoration of the library at Louvain (an Old World masterpiece destroyed during the war) by public subscription of the American people is a recognition of supreme sacrifices made by Belgium during the World War and an evidence of the architectural appreciation of an Allied nation.

Like all periods of readjustment the present era possesses its phase of opportunism. As previously stated there had been a scarcity of dwellings after the war, owing to the ban upon domestic building during that period. In this country, and in most European countries, practically all building material was requisitioned by the governments, and as a consequence, construction costs and rental values soared extravagantly. Labor was as yet not receptive to the hoped for normal wage. Living costs still remained high. The eternal conflict between capital and labor, fanned by the abnormal labor and living costs, has resulted in the present false construction prices.

Expert artisans must be developed—there are not, today, enough workers to supply the necessities of the building trades. Rational costs will not obtain until conditions fulfill the law of supply and demand. Under these housing conditions, however, many new buildings have been erected throughout the country, principally in the larger cities such as Greater New York, where in certain sections dwelling houses of a type to accommodate many families have been recently built. These structures charge an almost prohibitive rental and consequently are available only to the wealthy classes.

The housing situation has been so acute that special State and municipal legislation has been necessary. A measure of relief has been afforded in some sections by exempting new housing projects from tax payments for a period of years. This tax exemption has had an appreciable result in renewed activities in suburban developments. Districts to be served by future transit improvements have felt the effects of the residence building impetus—principally in the form of one and two family detached and semi-detached houses. This spreading of the population is in the line of municipal betterment—for it has forced many people to partake of good light

and air not possible in congested tenement surroundings. In the field of cottage and small house design a spirit of eclecticism has been apparent, due to the many opportunities of individualism in the use of brick and stucco.

Much interest has been shown in the advancement of the extensive Metropolitan Life Insurance Company's housing project in Long Island City, N. Y. In a suburban district this company has designed and undertaken the initial constructive steps for a scheme that has been heralded as the final solution of the "Housing Problem."

The plans provide for a series of apartments so detailed that all of the modern improvements necessary to comfortable housekeeping shall be furnished. The general scheme insures the advantages of the best light, air and sanitation. The entire investment has been studied with the ultimate purpose of charging a rental of \$9 per room. One of the features that has attracted general comment has been the elimination of the separate dining room and its replacement with a "pullman," a space contiguous to the kitchen of sufficient size to permit of a table and benches.

The congested condition of the principal hotels and their almost prohibitive rates led to the development of schemes whereby large hotels have been projected to contain every necessary convenience and comfort compatible with lower construction cost. The reduction in room sizes and the cutting out of expensive public rooms and costly decorations have resulted in structures where a probable profit is figured on a room rental ranging from \$9 to \$14 per week.

During the past year and a half an immense activity has manifested itself in the planning and construction of schools of all grades. The school program of New York City is colossal in its scope. To carry this project to fruition over \$80,000,000 will be spent.

One of the exceptional phases of the hard-set rules established by the Federal government during the war was that which permitted the releasing of building material needed for erecting such institutional projects as State prisons and hospitals; the latter principally for the insane. As a result, this work, at a great expense, has been steadily progressing despite the handicap of the material and labor difficulties, caused by constant strikes throughout the country. Examples of major State hospital constructions are to be found at Morris Plains, N. J., and at Marcy, and Creedmoor, N. Y. The scope of the New York State projects is indicated by the fact that when finished the new hospitals, together at a cost of about \$14,000,000 will take care of an additional insane population of over 7,000.

A constant progress has also been shown in the construction of penal institutions. The most significant work in this field is the fabric designed to house the new classification unit at Sing Sing Prison, New York State.

Agriculture touches the life of man at every point. Seventeen thousand empty farms, in a single State, is an index of the desertion of the agricultural domain. The necessity of re-establishing an interest in farming and its dependencies and of establishing the knowledge of how to productively prosecute the industry has focussed attention upon this problem to a very

marked degree, in many parts of the nation during the past three years. The most intensive and, without doubt, the most extensive project in scientific agricultural development has been undertaken by Cornell University in the New York State College of Agriculture, Ithaca, N. Y. The completed scheme will entail a cost of more than \$6,000,000. The first unit of the project, the dairy industry building, was approaching completion at the beginning of February 1923.

The United States is exhibiting a markedly progressive spirit in all phases of its architectural and engineering projects. Individuality is universally shown and throughout the nation the constructed works successfully present, as true indices, the character of the phase of civilization they house. Nowhere is this more notably evidenced than in the great modern business structures and fine palatial residences in the large cities and the wonderful villas with their beautiful garden and park settings to be seen throughout the country, often times rivaling the great examples of the Renaissance. It is evident that as the result of modern methods and progress the world is entering upon an era of development that will establish a standard of logic and truth in architectural achievement.

LEWIS F. PILCHER,

Formerly State Architect of New York.

ARGENTINA, a republic of South America extending from Paraguay and Bolivia in the north to the extreme of the continent. It has an area of 1,153,119 square miles and a population on 1 Jan. 1921 of 8,698,516. The republic is divided into 14 provinces, 10 territories and a Federal district. These with their areas and populations are as follows:

PROVINCES, ETC.	Area (sq. miles)	Popula- tion 1 Jan. 1921	Capital
Buenos Aires.....	117,777	2,336,507	La Plata
Santa Fe.....	50,713	1,007,512	Santa Fe
Cordoba.....	66,912	805,940	Cordoba
Entre Rios.....	29,241	475,236	Parana
Corrientes.....	33,535	371,815	Corrientes
San Luis.....	29,035	129,655	San Luis
Santiago del Estero.....	55,385	298,110	Santiago
Tucuman.....	10,422	350,681	Tucuman
Mendoza.....	56,502	311,740	Mendoza
San Juan.....	37,865	131,179	San Juan
La Rioja.....	37,839	84,643	La Rioja
Catamarca.....	36,800	108,544	Catamarca
Salta.....	48,302	146,903	Salta
Jujuy.....	14,802	76,506	Jujuy
TERRITORIES			
Misiones.....	11,511	62,159	Posadas
Formosa.....	41,402	21,880	Formosa
Chaco.....	52,741	52,258	Resistencia
La Pampa.....	56,320	124,294	Santa Rosa
Neuquen.....	40,530	33,574	Neuquen
Rio Negro.....	79,805	47,693	Viedma
Chubut.....	93,427	28,813	Rawson
Santa Cruz.....	109,142	11,603	Gallegos
Tierra del Fuego.....	8,299	2,559	Ushuaia
Los Andes.....	34,740	2,671	San Antonio
FEDERAL DISTRICT			
Buenos Aires.....	72	1,676,041	Buenos Aires
Total.....	1,153,119	8,698,516	

persons left the country. Buenos Aires, the capital, has a population of 1,676,041.

Education.—Primary education is free and compulsory for all children between the ages of 6 and 14. The population of school age is 1,756,053 and of these 1,076,045 are attending school. There are 9,268 primary public and secular schools with 36,615 teachers and 1,190,231 pupils. Secondary or high schools are also in the hands of the general government and number 42 with 1,244 teachers and 11,022 students. There are also 33 private secondary schools with 3,000 students and 400 teachers. There are 90 normal schools with 15,000 students and 40 special schools with 12,000 pupils. There are seven universities—the national institutions at Cordoba, Buenos Aires, La Plata and Rosario, and the Provincial institutions at Tucuman, Santa Fe and Cuyo.

The educational expenditures of the republic in 1920 were as follows:

CLASS	Amount expended, 1920
Primary schools.....	\$38,798,656
Secondary schools.....	8,274,720
Technical and commercial.....	5,381,424
Normal.....	10,931,864
University.....	7,464,158
Miscellaneous.....	1,034,512

Religion.—The Roman Catholic religion is supported by the state although there is no state religion. All forms of religion are tolerated. The Roman Catholic Church has an archbishop at Buenos Aires and 10 bishops, one in every chief city of the Republic. There are eight seminaries for the training of the clergy.

Agriculture.—There are 62,550,000 acres under cultivation which is about one-fifth of the total arable area. The chief crops are wheat, Indian corn, flax, oats, cotton, sugar, and tobacco. Wheat was planted to over 15,000,000 acres in 1921 and yielded 5,015,000 metric tons of which about one-third was exported. In 1922, the wheat crop amounted to 215,320,000 bushels from 16,081,000 acres. About 8,000,000 acres were planted to Indian corn in 1921 and yielded 6,000,000 tons, three-fourths of which found its way to the export market. The oat crop of 1922 was 49,600,000 bushels from 2,618,000 acres. The flax crop of 1923 was estimated at 60,270,000 bushels. The sugar crop varies somewhat but in 1920 reached a total of 209,653 metric tons. Wine production is on the increase and in 1920 aggregated 113,028,630 gallons.

Industries.—According to the returns of the last industrial census the manufactories of the republic were as follows:

CLASS OF INDUSTRY	Number of estab- lishments	Capital invested
Foods and kindred products.....	18,983	763,772,611
Clothing and toilet articles.....	13,498	160,326,029
Building and construction.....	8,582	216,182,262
Furniture.....	4,441	62,638,495
Metallurgy and kindred industries.....	3,275	107,620,033

In 1920, 188,688 immigrants were admitted to the country but in the same year 148,907

There are in all 48,779 factories employing 410,201 persons and capitalized at 1,787,662,295 pesos.

Live Stock.—This industry is in a flourishing condition and pure bred stock are now to be found in all the cattle-raising centres. The last stock census reported 27,392,126 head of cattle, 45,303,419 sheep, 9,366,455 horses, 4,670,130 goats, 3,227,346 swine, 565,069 mules, and 260,157 donkeys.

Mining.—Copper, gold and silver are worked to a slight extent especially in Catamarca. Coal and oil properties have undergone considerable development of late years. The output of petroleum in 1921 was 277,807 tons.

Commerce.—Live stock and agricultural products are the chief exports of the country but during 1922 there were a number of depressing factors which were marked by a decline in both export and import trade. In a normal year Argentina sells beyond her shores goods to the value of \$1,000,000,000 and buys goods to the value of \$700,000,000 approximately. Textiles form the heaviest item on the import list followed by foodstuffs, iron, glassware, chemicals, oils and dressed lumber.

In the first 10 months of 1922, Argentina exported 3,352,000 tons of wheat, 1,894,000 tons of corn, 797,000 tons of linseed, 81,000 tons of flour; sheepskins 57,000 bales; salt hides, 3,605,000; dried hides, 1,824,000; wool, 16,728 bales; beef, 3,982,000 quarters; quebracho logs, 94,000 tons; quebracho extract, 123,000 tons. In the 11 months ending 31 Aug. 1922, there were exported 447,000 bales of wool and the first eight months of the same year 3,878,000 cattle hides were sent out of the country. In the same period 22,000 tons of tallow were exported. The exportable surplus of linseed was placed at 55,240,000 bushels.

The customs receipts in 1920 amounted to \$94,600,000. The United Kingdom and the United States are the chief customers for Argentina's products and also furnish most of the imports.

Banking and Finance.—The Banco de la Nacion has a capital of \$50,000,000. It is authorized to make loans to the central government to the extent of 20 per cent of its capital. There are 143 banks in the republic of which only 25 are foreign. On 30 June 1922 there were on deposit in the principal banks 16,050,000 gold pesos and 3,188,198,000 pesos paper currency. At the end of 1921 there were in circulation notes to the value of 1,362,563,974 pesos secured by 480,600,127 pesos gold.

The revenue for 1921 was 495,841,787 paper pesos against an expenditure of 558,950,000 pesos, the deficit being 63,108,213 pesos (\$22,719,000 at current exchange rates). The total debt at the end of 1921 was 1,285,245,991 paper pesos. A new loan of \$200,000,000 was negotiated with New York bankers in the autumn. It was claimed that the institution of an income tax would be necessary to overcome the existing situation which results in a yearly deficit. The total wealth of the country is placed at \$20,000,000,000.

Army and Navy.—There is a compulsory military service law for all citizens from their 20th to 45th year, with one year of intensive training. The total peace footing of the army is about 20,000 officers and men.

The Republic has two battleships of the dreadnought class, two pre-dreadnoughts, four

armored cruisers, a light cruiser, seven destroyers, eight torpedo boats and several lesser craft. The navy personnel numbers 9,000 men and 500 officers.

The military budget for 1921 was \$14,000,000 and the naval budget \$11,700,000.

Constitution and Government.—The executive power is vested in a President elected for a term of six years by electors chosen by the provinces after the manner of the United States. The legislative power is vested in a National Congress of two chambers, the Upper or Senate having 30 members elected for nine years by the provincial legislatures and in the capital by electors. The Lower House or House of Deputies is the popular chamber having one deputy for every 49,000 inhabitants. Deputies are elected for four years, one-half of the house retiring every two years.

Senor Hipolito Irigoyen completed his term of service in the Presidency on 12 October 1922, when Senor Marcello de Alvear assumed the office.

Recent History.—An effort was made at the beginning of the year to expropriate the foreign packing houses in order to protect the national meat interests. It was not successful because of the organized opposition of the former and also because of the report of the Argentine Rural Society, sent to the House of Representatives, in which it declared that the depression in the meat industry was due to the world-wide depression after the boom period of the war. The demoralization in the wool market was the cause of an uprising in the Santa Cruz district which was quickly suppressed by the military. Under the budget as passed for the year, woolen cloth made in foreign countries from raw material imported from Argentina is declared free of duty for the period of three years. Such cloth, however, must be made to the order of Argentine firms and the latter must within the three-year period erect plants for the weaving of at least 500,000 pounds of wool annually.

Early in the year a national insurance law was enacted, by the terms of which, insurance is made compulsory for all citizens earning more than 6,000 nacionales a year. This insurance comprises as minimum benefits the age pension, pension for the disabled, illness and maternity insurance. The quotas of the employer and of the employee are fixed according to the amount earned.

The national legislature also regulated the consumption of intoxicating liquors. It is now forbidden to sell liquor from Saturday at midnight until early on Monday, and from 1 Jan. 1923, no alcoholic beverage containing any ingredient other than the product of fermented grapes, apples and pears may be manufactured or sold in Argentina.

Immigration continued on the increase throughout the year, being especially heavy from Germany and Spain. The Japanese government negotiated an agreement with the Argentine for an increase in Japanese immigration.

In the general elections held 2 April the Radical party was returned to power, greatly to the surprise of those who thought the noisy criticism of President Irigoyen indicated dis-

satisfaction with the administration. There was projected during the year a scheme for the industrial exploitation of the Falls of the Iguazu, one of the greatest falls in the world. This project may be the joint enterprise of Brazil and Argentina, the cataract being on the boundary line of the two countries. During the year it was announced that the new census showed Buenos Aires with a population of 1,700,000, thereby making it the second Latin city of the world, Paris being the first. The depression noted in farm products early in the Argentine spring caused a committee of farmers to importune the government for assistance. One of the measures recommended was a limited moratorium in the payment of their debts. The Argentine government in August consented to the renunciation of cable monopolies, thereby removing the last difficulty in the way of a free competition of cable companies in South America. An agreement was effected with Chile for a joint management of the Trans-andean Railroad and 2,500,000 gold pesos were set aside for its electrification. The appointment by Spain of Count Romanones, former Premier, as Ambassador to Argentina gave the greatest satisfaction. It was said that it pre-saged the visit of his sovereign in 1923.

ARICA-TACNA DISPUTE. See PEACE AND ARBITRATION, INTERNATIONAL.

ARIZONA, a southwestern State of the United States, lying to the north of Mexico between New Mexico and California. The State has an area of 113,956 square miles and a population of 334,162 in 1920. The State ranks fifth in size and 46th in population among the States of the Union. The capital is Phoenix, with a population of 29,053. The State has 14 counties. Of the entire population in 1920, 291,449 were whites, 8,005 negroes, 1,719 Asiatics, and 32,989 were Indians. Again there were in the State 78,099 foreign born, of whom 2,882 were English, 60,325 Mexicans, 1,962 Canadians and 1,516 Germans. The chief cities, with their populations, are: Phoenix, the capital (29,053); Tucson (20,292); Bisbee (9,205); Douglas (9,916), and Globe (7,044).

Education.—There is a compulsory attendance school law for children between the ages of eight to 16 years. Instruction is free for children from six to 21 years of age. There are 73,546 pupils in primary and secondary schools; 685 students in normal schools and 860 students in the State University. The appropriations for education were \$2,523,480 in 1921-22 and \$2,275,994 in 1922-23.

Religion.—In the order of their numerical strength the denominations are: Roman Catholic, Latter-Day Saints, Presbyterian, Methodist and Congregational.

Production and Industry.—Mining, stock-raising and agriculture are the chief industries of the State. Mining is most important. The copper mines are among the largest in the world, the best known being the United Verde. Copper, gold, silver and lead are the principal metals mined in the State.

The value of the gold, silver, copper, lead and zinc produced by mines in Arizona in 1922,

according to the estimate of the United States Geological Survey, Department of the Interior, was \$65,219,000; the value in 1921 was \$29,563,472. A marked increase was made in the production of all metals as a result of the resumption of activities early in the year at the large mines and smelting plants. The total, however, was not unusually large and did not approach the average of the last 10 years. The gold produced increased from \$2,930,303 in 1921 to \$3,618,000 in 1922 as a result of the increase in gold from the smelting and refining of copper ore. The largest output of gold came, as in past years, from the United Eastern mine, at Oatman, but the output of the San Francisco (Oatman) district decreased from \$2,310,885 in 1921 to about \$1,879,500 in 1922.

The mine output of silver increased from 2,469,394 ounces in 1921 to about 4,760,000 ounces in 1922. Most of the silver was produced from copper ore mined in Cochise and Yavapai counties. Little silver comes from mines near Miami, Ajo or Ray. The largest producers of silver from copper ore were the Copper Queen, Calumet & Arizona, United Verde and United Verde Extension mines.

The mine output of copper increased from 185,034,194 pounds in 1921 to 418,000,000 pounds in 1922. The value of the output increased from \$23,869,411 in 1921 to \$56,029,000 in 1922. By May all the large smelting plants except the one at Clifton were active, and most of the copper mines except the Magma had resumed operations. The largest producers of copper in 1922 were the Inspiration, Miami, and Copper Queen mines, followed by the United Verde, Calumet & Arizona, United Verde Extension, New Cornelia, Ray Consolidated, Old Dominion, Arizona Commercial, Iron Cap, Swansea and Superior & Boston.

The mine production of lead in Arizona increased from 6,541,433 pounds in 1921 to 14,080,000 pounds in 1922. The value of the output increased from \$294,364 to \$802,500. The Copper Queen mine, at Bisbee, the largest producer of lead in Arizona, greatly increased its shipments of silver-lead ore, which is smelted at El Paso, Tex.

The Copper Queen mine was the only producer of zinc in Arizona in 1922 and shipped several hundred tons of zinc ore to an Eastern smelter. The Hillside mine, in Yavapai County, was idle, but work was resumed at the Tennessee mine, in Mohave County.

The dividends paid by Arizona mining companies (New Cornelia, Miami, United Verde Extension, Calumet & Arizona, United Eastern, United Verde and Arizona Copper) during the first 11 months of 1922 amounted to \$6,630,815, exclusive of \$1,800,000 paid by the Phelps Dodge Corporation, which operates the Copper Queen and Morenci properties in Arizona and other mines in Mexico and New Mexico.

Manufacturing is of small proportions aside from the large smelting establishments. Live-stock thrive on the mountain slopes and agriculture is being promoted by vast systems of irrigation. The railroad mileage of the State was 2,478 in 1922. Cotton of the long staple variety has been introduced. The value of all farm crops

ARIZONA — ARKANSAS

in 1922 was estimated at \$26,986,000. The chief crops in 1922 were:

Crop	Acreage	Yield	Value
Corn.....	39,000	1,170,000 bu.	\$1,346,000
Wheat.....	49,000	1,274,000 "	1,465,000
Barley.....	25,000	825,000 "	701,000
Oats.....	20,000	620,000 "	422,000
Hay (tame).....	165,000	578,000 tons	5,850,000
Hay (wild).....	10,000	5,000 "	60,000
Beans.....	7,000	24,000 bu.	108,000
Potatoes.....	6,000	510,000 "	459,000
Sweet potatoes.....	2,000	300,000 "	525,000
Cotton.....	100,000	42,000 bales	6,300,000
Grain sorghums.....	30,000	900,000 bu.	720,000
Apples.....		77,000 "	
Peaches.....		128,000 "	
Pears.....		18,000 "	

Government.—The State was admitted to the Union on 14 Feb. 1912 as a sovereign State. The initiative, referendum and the recall are part of the legislative machinery of the State, which has also the right to engage in industrial pursuits. There is a Senate of 19 members and a House of Representatives of 35 members. The State sends one member to the Federal Congress and two senators. The Legislature meets annually on the second Monday of January.

Officers.—The Governor in 1922 was Hon. Thomas E. Campbell, whose term expired January 1923, when he was succeeded by the Hon. G. W. P. Hunt. Other State officers entering on their duties in January 1923 were Secretary of State, James H. Kerby; Attorney-General, John W. Murphy; Treasurer, Wayne Hubbs; Auditor, R. H. Ramsey; Superintendent of Education, C. O. Case; members of Supreme Court, H. D. Ross, A. G. McAllister and E. T. Flanagan.

Finances.—The authorized expenditures of the State in 1921–22 amounted to \$3,923,468 and to \$4,244,001 in 1922–23. The bonded debt of the State on 1 July 1922 was \$5,413,275.29. On that date there was \$2,988,948.42 in the Redemption Fund, leaving a total net debt of \$2,424,326.87. The assessed value of real and personal property in the State was \$732,021,286 in 1922. The following table shows the condition of the State Treasury as of 1 July 1922:

Balance on hand 1 July 1921.....	\$2,864,243 19
Receipts during fiscal year 1921–22.....	6,226,163 49
Tax apportionment.....	5,635,955 28
Total receipts.....	\$14,726,361 96
Disbursements during fiscal year 1921–22.....	9,485,851 74
Balance at beginning current fiscal year, 1922–23.....	\$5,240,510 22

Legal Holidays.—New Years Day; Friday following 1 February (Arbor Day) in southern Arizona; Friday following 1 April (Arbor Day) in northern Arizona; 14 February (Admission Day); 22 February (Washington's Birthday); 30 May (Memorial Day); 4 July (Independence Day); first Monday in September (Labor Day); 12 October (Columbus Day); first Tuesday after first Monday in November (Election Day); 11 November (Armistice Day); Thanksgiving Day; 25 December (Christmas Day).

ARIZONA, University of, a State co-educational institution, founded in 1885 and located at Tucson, Ariz. In 1922–23 it had a faculty of 108 members, 2,392 students, property valued at \$1,460,000, including land, buildings, equipment, books, etc., and an income of \$1,018,563.05. Cloyd Heck Marvin is president.

ARKANSAS, a south central State of the United States, bounded by Missouri, Tennessee, Mississippi, Louisiana and Oklahoma. It has an area of 53,335 square miles and a population of 1,752,204 in 1920. The State's geographic centre is in Pulaski County, 12 miles northwest of Little Rock. Of this population, 1,265,782 were native whites, 13,975 foreign-born whites, 472,220 negroes, 121 Asiatics and 106 Indians. The chief cities are: Little Rock, the capital, 65,030; Fort Smith, Pine Bluff and Hot Springs.

Religion.—The chief religious denominations in the order of their numerical strength are: Baptist, Methodist, Roman Catholic, Disciples of Christ and Presbyterian.

Education.—There are provided separate schools for white and colored children. There are 461,591 children in the primary schools with 12,008 teachers; two public normal schools with 42 teachers and 922 students and 110 in the faculty and 1,300 students in the State University at Fayetteville. Other large institutions are Ouachita College, Arkansas College, Hendria College, and Philander Smith College.

Finance.—Receipts for the year 1922 amounted to \$6,937,592.96; expenditures, \$6,645,851.61, leaving a balance of \$291,741.35 to be added to the balance in hand at the beginning of the year \$638,448.76. The State debt amounted to \$2,488,166.67, but according to the Council of the Corporation of Foreign Bondholders the State has a defaulted debt of \$8,700,000. The assessed value of real property in 1922 was \$396,089,491; of personal property, \$193,662,201.

Agriculture.—The acreage, yield and value of the chief crops in the State in 1922 are as follows:

CROP	Acreage	Production	Value
Corn.....	2,350,000	45,825,000 bu.	\$38,951,000
Winter wheat.....	86,000	1,118,000 "	1,185,000
Oats.....	264,000	6,336,000 "	3,612,000
Rye.....	1,000	12,000 "	12,000
Hay (tame).....	585,000	731,000 tons	9,942,000
Sorghum syrup.....	28,000	1,792,000 gals.	1,680,000
Hay (wild).....	133,000	140,000 tons	1,344,000
Rice.....	154,000	7,392,000 bu.	5,766,000
Potatoes.....	35,000	2,380,000 "	3,094,000
Sweet potatoes.....	47,000	3,760,000 "	3,346,000
Cotton.....	2,844,000	1,040,000 bales	122,720,000
Peanuts.....	17,000	10,540,000 lbs.	401,000
Apples.....	16,000	2,400,000 bu.	
Peaches.....		2,040,000 "	
Pears.....		100,000 "	

Agriculture is the chief source of wealth and employment, the total value of all agricultural products in 1922 being over \$200,000,000. Lumber is also a great asset, the annual output being valued at about \$75,000,000.

According to the last census there were in the State 232,604 farms, 9,210,556 acres of improved land in farms, 7,396,028 acres of woodland in farms and 850,166 acres of other unimproved

land in farms, making a total of 17,456,750 acres in farms. The value of all farm property was \$924,395,483. Land represented a value of \$607,773,440 and buildings \$145,337,226. Implements and machinery were valued at \$43,432,237 and livestock at \$127,852,580.

Mining.—According to the last census Arkansas ranked 34th in value of its mineral products and 30th in the total number of persons engaged in the mining industries. Classified by principal products and listed in order of value of products are bituminous coal, bauxite, natural gas, sandstone, limestone, lead and zinc, granite, abrasive materials, manganese ore and iron ore. In 1921, the coal output was 1,400,000 tons as against 2,103,596 tons in 1920. Phosphate deposits are extensive and are in course of development for fertilizers.

Judiciary.—Members of the Supreme Court: E. A. McCulloch, Chief Justice; C. D. Wood, Frank Smith, T. H. Humphreys and J. C. Hart.

ARKANSAS COLLEGE, a Presbyterian co-educational institution, founded in 1872 and located at Batesville, Ark. In 1922-23 it had a faculty of 14 members, 174 students, property valued at \$338,827 and an income of \$32,451 exclusive of revenue from board. William S. Lacy, D.D., is president.

ARKANSAS, University of, a State coeducational institution, founded in 1871, opened 1872 and located at Fayetteville, Ark. In 1922-23 it had a faculty of 110 members, 1,300 students, property valued at \$1,000,000 and an income of \$519,128. John Clinton Futrall, A.M., LL.D., is president.

ARMAMENTS, Conference on the Limitation of. See PEACE AND ARBITRATION, INTERNATIONAL; WASHINGTON CONFERENCE.

ARMAMENTS, National Council for Reduction of. See PEACE AND ARBITRATION, INTERNATIONAL.

ARMENIA, the name given to a mountainous region of western Asia with an area of 140,000 square miles and in which Armenians are the dominant race numerically. Prior to the Great World War this region was divided politically between Turkey, Persia and Russia. Specifically the name is now applied to the territory of the Socialist Soviet Republic of Armenia situated in Transcaucasia, which territory was formerly included in Russian Transcaucasia. The area of this republic is 15,240 square miles and has a population of 1,214,399. The Chief Commissar is Doctor Miasnikoy.

The recent history of Armenia has been of the most tragic in the world. The Republic of Erivan was set up in 1918 after the Turks and the Central Powers had been persuaded to grant autonomy to the Georgians, Tatars and Armenians. This new state was recognized by the Allied nations in January 1920 and its de jure recognition resulted from the Treaty of Sevres which was concluded in August 1920 between Turkey and the Allied nations. Soviet influence soon made itself felt and on 2 April 1921 Armenia was proclaimed a Soviet state. By agreement with its neighbor Caucasian states Armenia has access to Batumi, which they have made a free port. While the other republics of the Caucasus absorbed by

the Soviets were loud in their protestations, Armenia remained silent and apparently felt safer under the ægis of the Soviet than facing alone the armed forces of Turkey.

ARMOUR INSTITUTE OF TECHNOLOGY, a non-sectarian educational institution for men, founded in 1892 and located at Chicago, Ill. In 1922-23 it had a faculty of 72 members, 724 students, and property valued at \$1,000,000. Income figures not given. Howard Monroe Raymond, E.E., is president.

ARMY OF THE UNITED STATES. The Army was so radically affected by the participation of the United States in the European war that no study of its subsequent history can be undertaken without some consideration of the military developments in the country in the later years of the great conflict.

The United States entered the World War on 6 April 1917 with an army of 200,000 men composed of 133,000 regulars and 67,000 National Guardsmen. When the Armistice on 11 Nov. 1918 concluded hostilities the army had been increased to an aggregate of 3,757,624, of whom 2,057,675 (including marines) were transported to France. During the last six months of the war about a million and a half American soldiers landed in France.

One million seven hundred thousand soldiers were in camps in the United States and 23,700,000 men, 18 to 45 years of age, had been registered and classified under the selective service law. The country had accepted the principle of compulsory military service for all able-bodied men of military age and the drafting of millions for service in a war whose terrors had been thoroughly exploited for more than three years was accomplished without any serious opposition. A small fractional minority opposed to all organized government was locked up whenever it attempted to impede the drafting of troops. Great efforts were made to be fair to honest "conscientious objectors" and, although, in the hurry and excitement of the time, some of these suffered temporary imprisonment their personal convictions were generally granted every consideration when not suspected of participation in obstructionist propaganda.

The practical unity of our vast and varied civilian population in supporting the draft for a foreign war was a remarkable demonstration of national solidarity. There can be no doubt that down to the end of 1916 there had been a nation-wide desire to keep out of the European War and yet, when once the country had become involved in the foreign struggle, an overwhelming reversal occurred and the people as a whole were eager to share as fairly as might be possible the risks and the costs.

In considering the military problems of the United States it is important to realize that although our participation in a European War violated our most cherished national tradition that we should keep clear of all such entanglements, nevertheless our hundred million people were as one in support of our military forces once the die had been cast. That they had not undergone any such complete conversion of ideas in international politics became evident when after the war they refused the demand of the President who urged joining the League of Nations. The

significant fact established was that the vast heterogeneous population of the country has been sufficiently welded into a composite nation to be counted upon for combined bearing of all burdens in time of national necessity. A second fact of military importance is the greatly broadened interest in military affairs and quite general realization of the necessity for adequate preparedness. The vast armies did nothing to warrant any fear of "militaristic" dangers in this republic. They returned quickly and gladly to civil life and the era of retrenchment which ensued as the country counted the cost of the war gave no evidence of a willingness to be found unprepared for any future emergency which may arise. Economic conditions have compelled a paring down of expenditures to an extent which has curtailed our military establishment to an almost dangerous degree but the economies have been sane and necessary. Unexpected reduction of personnel among both commissioned and non-commissioned officers shook the morale temporarily in 1922 but all branches of the military family are co-operating with a spirit of mutual faith in each other and the eventual fairness of the country they serve. The century-long lack of harmony between National and State troops has been vanquished and the provisions of a wise new law recognize both as part of the nation's military force.

Maj.-Gen. James G. Harboard, who was the able chief of staff in the American Expeditionary Forces, summed up the habitual tendency of the country in the widely appreciated phrase, "After each war the size of our debt incurred through unpreparedness brings the debt, and the debt continues the unpreparedness, the whole forming a vicious and expensive circle." After 33 years of devoted and brilliant service to the country General Harboard applied for retirement when an opportunity offered to return to civil life and a business career. In January 1923 the House of Representatives passed an amendment to the army appropriation bill stopping General Harboard's retired pay because he had become an officer of a corporation which might seek government contracts. There was widespread newspaper criticism of this action expressing the hope that the legislators in Washington would recall this affront to a distinguished officer entitled under the law to retirement pay. The military committee of the Senate subsequently struck out from the Army bill this item.

In the summer of 1918, when no one anticipated the end of the war in that year, the military program for American participation on the battle front was being increased from the original plan for 80 combat divisions to a total of 100 combat divisions. As a matter of fact at the time of the Armistice the ration strength of the British, French and American armies showed British 28 per cent, Americans 31 per cent, French 41 per cent. Of the western front the British held 19 per cent, the Americans 22 per cent and the French 59 per cent.

The unexpectedly early dawn of peace created immediately a series of new problems connected with the demobilization of the armies. The plan adopted was to transfer all of the men prior to their discharge to the camp in or nearest to the State from which they had entered the service and to discharge them there—33 camps scat-

tered throughout the country were designated and the following table indicates the speed and efficiency of the demobilization:

	Officers discharged		Enlisted men discharged	
	Number	Cumulative	Number	Cumulative
1918				
Nov. 11-30.....	593	593	43,000	43,000
Dec.....	37,043	37,636	609,000	652,000
1919				
Jan.....	23,563	61,199	358,000	1,010,000
Feb.....	14,913	76,112	263,000	1,273,000
March.....	11,479	87,591	263,000	1,536,000
April.....	12,185	99,776	298,000	1,834,000
May.....	14,622	114,398	383,000	2,217,000
June.....	13,588	127,986	391,000	2,608,000
July.....	16,404	144,390	361,000	2,969,000
Aug.....	15,986	160,376	151,000	3,120,000
Sept.....	8,716	169,092	73,000	3,193,000
Oct.....	8,690	177,782	33,000	3,226,000
Nov. 1-10.....	2,018	179,800	10,266	3,236,266

The following estimates of our wartime population and its related occupations will be of value to the military student. Of the estimated population of 105,000,000 at the time of the war we had about 30,000,000 males of producing age and the following table indicates the occupations of these Americans:

		Per 1,000
Men in France fighting.....	1,400,000	13
Men in France behind lines.....	600,000	6
Men in army in United States.....	1,700,000	16
Men in navy.....	550,000	5
Men in war work in United States....	7,150,000	68
Men in non-war work in United States	18,600,000	178
	30,000,000	286
Old men and boys.....	24,000,000	229
Total males.....	54,000,000	515
Women in war work.....	2,250,000	21
Women in non-war work.....	25,750,000	245
Total women of producing age....	28,000,000	266
Old women and girls.....	23,000,000	219
Total females.....	51,000,000	485
Grand total.....	105,000,000	1,000

Under the terms of the Armistice the Coblenz bridgehead on the Rhine was designated for American occupation and that German sector was occupied by United States troops from December 1918 until January 1923. When President Harding ordered the return of this last detachment of the American Expeditionary Forces it had been greatly reduced so that when recalled the troops commanded by Maj.-Gen. Henry T. Allen numbered in all only 1,188 officers and men.

The record of more than four years occupation of Coblenz and the surroundings is entirely creditable to the American soldier. His final departure brought sincere expressions of regret from the German officials and population who had grown to regard him as much more friend than enemy.

The United States flag which had become the local symbol for post-war justice, fairness and military excellence was finally lowered on the battlements of Ehrenbreitstein at noon 24 Jan. 1923.

During the summer of 1918 an American force was mobilized at Aldershot in England for service at Archangel, Russia, to prevent the use of that port as a base for German submarines. These troops commanded by Col. Geo. E. Stewart, 339th infantry included the 1st battalion, 310th engineers with auxiliaries and reported for duty to the British commanding officer, General Poole, at Archangel on 4 Sept. 1918. The purpose of this force was stated to be to guard military stores and to render such aid as might be acceptable to Russians in the organization of their own self-defense. This American force remained in North Russia from September 1918, to June 1919, during which time it occupied various positions along the Vologda railroad and the Onega, Dvina and Vaga rivers and was engaged in many minor operations against enemy forces with the following casualties:

Killed in action.....	109
Died of wounds.....	35
Died of disease.....	81
Died of accident and other causes.....	P. 19
Total deaths.....	244
Wounded.....	305
Taken prisoner (all released).....	4
Total casualties.....	553

In the summer of 1918 an American expeditionary force was sent to Siberia. It consisted of two infantry regiments with auxiliary troops, making an aggregate strength of about 5,000, from the 8th division commanded by Maj.-Gen. William S. Graves. These troops from San Francisco and Manila assembled at Vladivostok, Siberia, by the end of September 1918, and fought several minor engagements with Bolshevik forces at Uspanka and with partisan bands and anti-Kolchak forces at various places in Siberia. The casualties were:

Killed in action.....	28
Died of wounds.....	8
Died of disease.....	41
Died of accident and other causes.....	27
Suicide.....	5
Total deaths.....	109

Since 1918 Federal troops and national guard units have been called upon to suppress disorders and protect property at various places throughout the United States — without exception the arrival of troops in disturbed areas has been followed by a prompt return to law and order but in a few instances prolonged industrial struggles have necessitated the retention of Federal troops for considerable periods.

National Defense Act.—It is an extraordinary historic phenomenon that the United States of America succeeded in weathering the international storms of nearly a century and a half although totally lacking any practical program for national defense. The wide seas which separated us from foreign nations, coupled with the policy of political isolation enunciated by President Monroe, were largely responsible for our immunity from attacks against which we would have been well nigh defenseless.

Eventually the ocean barriers were narrowed

by marine development and political isolation was made impossible by the inevitable involvements of international commerce and finance. What our fathers believed could never happen came to pass when vast armies of American soldiers fought in a great war thousands of miles over seas. One of the earliest and most significant results of that war was the adoption of a definite military policy by the Act of Congress of 4 June 1920 called the National Defense Act.

The nation realized how great would have been the catastrophe had the United States been called upon to face alone in a sudden outbreak of war any great military power. Even as was the case with great veteran armies of our Allies holding the enemy in check, it was more than a year after we entered the war before we began to do any effective fighting. Seventeen months after we cast in our lot with the Allies we were sending green troops into the Meuse-Argonne battle where their courage and determination won a great victory but where inexperience took a heavy toll of precious lives. Providentially our allies were able to lend the artillery which we so sorely needed. On Armistice Day with the exception of 24 eight-inch howitzers manufactured upon plans which had been used by the Midvale Steel Company in the construction of howitzers for the British government there was not in the firing line a single field or heavy artillery gun manufactured for us in the United States after our entrance into the war, a period of 19 months. Had it not been for the material furnished us by the French and British there is every probability that the war would have been lost.

Never before had Americans, as a whole, realized the need for trained armies and the technical preparation for war which can be furnished only by professional soldiers adequately provided with the necessary means. The extremely democratic character of the great armies which we raised disabused the public mind of any fear that such armies, representing every element of our national life, could ever be a menace to our institutions. A clearer knowledge of modern history destroyed the old prejudice that armies are the cause of war. The people as a whole began to perceive that preparation for adequate national defense is an utterly different thing from promotion of war. The soldier who fights is far more innocent as a cause of war than his "peaceful" compatriot whose commercial interests with their world wide complications, lie at the root of most international disputes. From the first settlement of Europeans along the Atlantic seaboard the American people have been contributing not only to the promotion of world-wide liberty but also to the development of those conditions which make for the greater comfort, security and happiness of humanity. Life, liberty and the pursuit of happiness have been the goals of American ambition not only for ourselves but also for our fellow man all the wide world over. This broad humanitarianism grew and persisted from the days when in the early settlements every able bodied man bore arms. The liberty of those colonies was won in war. The rights of American ships and sailors on the high seas were secured through war. The abolition of slavery was won by soldiers when the arguments of philanthropists and philosophers had failed.

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Soldiers made possible the settlement of the vast western prairies. The Army set free the oppressed Cuban nation when diplomacy had tried and failed for generations. The Army, though ill prepared, finally ended the bloody struggle in the Great War. The Army has been the strong right hand of government which with unimpeached motives has ever upheld law and order when threatened by internal dangers. No finger of historian can be pointed in accusation at the armies of the United States which have ever been ready to obey and, if necessary, enforce the just law of the land.

George Washington begged the Congress to provide an adequate regular army and his pleading was repeated by many a soldier, president and statesman. The Congress turned a deaf ear to all these pleas through the long years of the nation's growth until the lessons of the Great War finally compelled the adoption of an adequate program, legally supported, for the raising, support and regulation of a coherent and sufficient force for the nation's defense.

The National Defense Act of 1920 provides that the Army of the United States shall consist of the Regular Army, the National Guard, while in the service of the United States, and the Organized Reserves, including officers and enlisted Reserve Corps. The functions of the Regular Army as the first line of defense are, in general, as follows:

1. To provide adequate personnel for the development and training of the National Guard and the Organized Reserves.
2. To provide the necessary personnel for the overhead of the Army of the United States, wherein the duties are of a continuing nature.
3. To provide an adequate, organized, balanced, and effective domestic force, which can be available for emergencies within the continental limits of the United States or elsewhere, and which will serve as a model for the organization, discipline, and training of the National Guard and the Organized Reserves.
4. To provide adequate peace garrisons for the coast defenses within the continental limits of the United States.
5. To provide adequate garrisons in peace and war for our overseas possessions.

The difficulty which confronts both the Congress and the War Department is to form a sound and sane estimate of the requisite strength for the fulfillment of the above essential duties. While the National Defense Act was being planned an estimate of regular army strength was agreed upon as certainly adequate. This was provided for a regular army of 280,000 men and 17,726 officers with a proportionate strength of National Guard and reserves. These were doubtless maximum peace time figures which it would be safe to curtail. The economic necessities of post-war national finance has led to various reductions from the original strength contemplated under the Defense Act until it is now belied by the best military and civilian authorities that the force has been reduced below a safe minimum. The safe medium undoubtedly lies somewhere between the ample strength of 1920 and the attenuated remainder after the drastic and well-nigh disastrous reductions of 1922

which resulted by the end of the latter year in an authorized army of 125,000 enlisted men and 12,000 officers. At the beginning of the fiscal year 1 July 1921, the enlisted strength of the regular army was 206,365 and by October 1921, this was cut to 150,000; still further Congressional action caused the cut of 1922 to 125,000 enlisted men. In connection with these reductions of the regular military establishment a situation developed which threatened the morale of the army more seriously than any other event in our history. From the establishment of the Military Academy at West Point the career of an army officer had been regarded as one of the few safeguarded life professions under the Republic. The pay never attracted the exceptionally fine type of youth, mentally and physically, who entered the Point. The honorable nature of the service attracted our most patriotic youth with the assurance that a lifetime of honest devotion to the service of the country would secure him in old age the retired pay of such grade as he might have attained if he survived until the age of retirement. The Congressional action of 1922 compelled the separation of a large number of middle aged officers from that profession to which they had devoted their youth and their lives. In addition to the compulsory discharge of officers many who could be retained among the 12,000 allowed were compelled to accept a demotion of a grade. Those discharged were granted a year's pay with which to tide over the period of readjustment into the civil world of business. Such an unforeseen catastrophe in the careers of men with families and severely handicapped by lack of commercial experience shook seriously the morale of the entire corps of officers for it became evident that the career of a faithful officer devoted for years to his country's service might be ended at any time by adverse political action.

The economies of 1922 were an absolute necessity but ought not to have been permitted to establish so serious a precedent threatening at any time the still further depreciation of the value of a commission in the army. The elimination of army officers between 30 June 1922 and 31 Dec. 1922 resulted in a total reduction of the strength of commissioned personnel from 12,880 to 11,385 showing a net loss of 1,495 officers in six months. At the end of 1922 there were 610 vacancies existing in the grade of second lieutenant—all of the higher grades were practically complete in conformity with the act of 30 June 1922, authorizing 12,000 officers. The demotions were as follows: majors to captains, 274; captains to first lieutenants, 765; first lieutenants to second lieutenants, 855. The number of officers on the retired list has shown the following growth: 31 Dec. 1921, 1,659; 30 June 1922, 1,708; 1 Jan. 1923, 2,219.

The following table indicates the extent to which the reduction of officer personnel must curtail duties imposed under the National Defense Act which was universally acclaimed to be the first effective law in our history creating a safe and sane military program. The table gives the number of officers necessary for the full performance of required duties and indicates the numbers that will be available with an officer corps numbering 12,000:

BRANCH OR ACTIVITY	Full provision	Reduced provision
General officers.....	68	68
Infantry.....	2,964	2,414
Cavalry.....	799	615
Field artillery.....	1,173	972
Coast artillery.....	1,037	700
Air service.....	1,650	1,061
Engineers.....	387	347
Signal corps.....	226	171
General staff.....	253	226
Adjutant-general's department.....	91	91
Inspector-general's department.....	42	42
Judge advocate general's department.....	83	81
Quartermaster's corps.....	943	699
Finance department.....	124	104
Medical department.....	1,163	1,163
Ordnance department.....	215	213
Chemical warfare service.....	74	72
Chaplains.....	125	125
Bureau of insular affairs.....	3	3
Professors.....	7	7
Military storekeeper.....	1	1
D. O. L. DUTIES		
National guard.....	704	485
Organization reserves.....	716	596
R. O. F. C.....	700	650
War college staff.....	35	35
Com. and G. S. school staff.....	76	76
Students' war college.....	65	65
Students' Com. and G. S. school.....	275	275
United States military academy.....	152	152
Recruiting.....	110	110
Disciplinary barracks.....	32	32
Aids.....	157	67
Office assistant secretary of war.....	23	23
C. M. T. C. officers.....	9	9
C. O. and Ex-res. depots.....	20	20
Headquarters special troops.....	21	17
Postal officers.....	5	.....
Miscellaneous.....	144	144
	<u>14,672</u>	<u>11,929</u>

The following table shows the peace strength of the army, both commissioned and enlisted, including Philippine Scouts, authorized by acts of Congress since the Great War:

	4 June 1920	7 Feb. 1921	30 June 1921	30 June 1922
Commissioned strength.....	17,726	16,799	16,654	12,000
Enlisted strength.....	280,000	175,000	157,882	132,148

The authorized enlisted strength (1922) has been tentatively apportioned among the several branches of the service as follows:

	Regular Army	Philippine Scouts	Total
Q. M. corps.....	8,000	474	8,474
Med. Dept.....	6,850	385	7,235
Finance Dept.....	393	8	401
Corps of Engineers.....	5,020	330	5,350
Ordnance Dept.....	2,307	49	2,356
Signal Corps.....	2,184	152	2,336
Chemical Warfare.....	445	.....	445
Cavalry.....	9,871	713	10,584
Field Artillery.....	17,173	1,003	18,176
Coast Art. Corps.....	12,026	1,600	13,626
Infantry.....	46,423	2,434	48,857
Air Service.....	8,500	.....	8,500
Detached enlisted men.....	5,758	.....	5,758
Unallotted.....	50	.....	50
	<u>125,000</u>	<u>7,148</u>	<u>132,148</u>

The actual strength of the Army was:

	30 June 1921	30 June 1922
Enlisted.....	214,500	133,259
Officers.....	13,299	13,248
Aggregate.....	<u>227,799</u>	<u>146,507</u>

The geographical distribution of the Army on 30 June 1922 was as follows:

	Officers and men
In Continental United States	
First corps area.....	5,731
Second ".....	16,275
Third ".....	11,482
Fourth ".....	12,378
Fifth ".....	4,598
Sixth ".....	6,388
Seventh ".....	7,135
Eighth ".....	24,281
Ninth ".....	16,889
Dist. of Washington.....	3,876
Total in United States.....	<u>108,983</u>
In Alaska.....	<u>584</u>
Canal Zone.....	8,334
Porto Rico.....	1,450
Hawaii.....	10,369
Philippines, Regular Army.....	6,939
Philippine Scouts.....	6,930
China.....	671
Germany.....	1,231
France.....	7
At large.....	34
Troops en route, military attaches, etc.....	975
Grand total.....	<u>146,507</u>

The National Guard.—The new defense act gave the National Guard an excellent program of development. The officers when federally recognized, although appointed by the Governors of the States, are a part of the Army of the United States. They are subject to Federal duty and receive pay from the Federal government. The century-long quibbling as to whether the Guard would serve the country in time of war beyond the frontiers has been finally ended. The units which had been Federally recognized previous to 5 Aug. 1917 were absorbed into the United States Army for war service and performed every duty at the front with great fidelity and marked credit. Like its associate component in the national scheme of defense, the Regular Army, the Guard has been hindered by the need for retrenchment in State as well as national policies. Allowances for equipment and training have been restricted and there has been, of course, a severe shortage of regular officers available and suitable for duty as instructors. The projected strength of the National Guard for the fiscal year which ended 30 June 1922 was placed at 238,950. As a matter of fact its actual strength was 159,658, a shortage of about 33 per cent. In January 1923 the War Department announced that Secretary Weeks had approved the recommendations of a special committee of Regular Army and National Guard officers for the further development of the National Guard predicated on a minimum peace strength of 250,000 men. The plan contemplates the organization of 18 infantry divisions, 4 cavalry divisions, 130 companies of harbor defense troops and 12 specially allotted infantry regiments. The spirit of the guard is excellent and the States are proving to be eager to do their share in its development. The spirit of real co-operation and mutual respect between the Regular Army, the National Guard and the Officers' Reserve Corps has been good and the country is assured of "one army." The recruiting difficulties which were natural immediately after the war have largely disappeared. The professional fitness of the officers and the physical and mental suitability of the enlisted men are producing a National Guard far superior as a

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military asset to any State forces heretofore in existence.

The Militia Bureau is especially charged with the duty of developing a high state of uniform efficiency in the National Guard throughout all of the States. Department and corps area commanders are directed to give their personal attention and co-operation in the efforts of the Militia Bureau and will lend all assistance within their power to the local authorities in developing the uniformity of organization and training. The potential strength of the Guard has been based on an estimate of 800 per Congressman but evidently required revision as the total so figured would reach about 435,000 in all. The actual post-war strength at the end of each fiscal year has been: 1920, 56,580; 1921, 113,630; 1922, 159,658. The appropriations by Congress for the National Guard in these years have been: 1920, \$13,177,750; 1921, \$28,000,000; 1922, \$25,554,000.

Organized Reserves.—The third line of defense consists of the Organized Reserves and the units comprising this force have been allocated to definite geographical districts throughout the United States with a view to associating each unit with a particular community.

Forty-two groups of regular officers and non-commissioned officers were sent out in the last fiscal year to commence the organization of the reserve divisions and other units. Some progress in organization has been accomplished but it is admitted that there will be little gained in the creation of "paper divisions" unless funds are available for training camps in which the officers, non-commissioned officers and specialists who constitute the peace time frame work of these organizations can be enabled to revive the already fading lessons of the war.

While a mere skeleton in times of peace, the Organized Reserves should be capable at the outbreak of war of rapidly forming 27 infantry divisions recruited from the communities where the officer and non-commissioned personnel has become familiar with local conditions.

The emergency mobilization strength contemplated for the three echelons of the Army is apportioned: Regular Army, 9 infantry divisions; National Guard, 18 infantry divisions; Organized Reserves, 27 infantry divisions. Each of the above to furnish a proportional strength in corps, army and general headquarter units. In addition to the 27 infantry divisions the Organized Reserves are to furnish six cavalry divisions beside the additional troops above referred to.

During the fiscal year in the Officers Reserve Corps there were 7,801 gains and 7,316 losses—the latter as follows: 968 resigned; 936 discharged; 570 died; 257 accepted appointment in Regular Army; 15 expiration of five-year commission; 4,570 appointments were either declined or canceled.

The Enlisted Reserve Corps on 30 June 1922 numbered a total of 480 men.

In the summer of 1922, \$1,800,000 was available by Congressional appropriation for citizens' military training camps of 30 day duration at 27 places throughout the United States and about 30,000 applications were received. The Military Committee of the Senate in January 1923 recommended an increased appropriation for these camps to \$2,200,000.

The courses of instruction provided are: Red, for those who have never had military training. White, for men possessing qualifications equivalent to those of a graduate from the red course. Blue, intended to train non-commissioned officers and specialists of the Regular Army, National Guard and Organized Reserves with a view to qualifying them for service as officers.

The report of the Secretary of War for the fiscal year ending 30 June 1922 showed the following expenditures:

Civil establishment	\$26,297,951 69
Military establishment	341,675,717 33
Rivers and harbors.....	40,123,446 66

OFFICERS RESERVE CORPS STRENGTH 30 JUNE 1922

	Maj.-Gen.	Brig.-Gen.	Col.	Lt.-Col.	Maj.	Capt.	1st Lt.	2d Lt.	Total
General officers of line	2	43	12	46	107	131	86	77	45
Adjutant-general			1	13	16	4	1		459
Inspector-general			8	54	133	108	734		35
Judge advocate-general			27	122	713	1,507	1,359	3,092	6,820
Quartermaster		16	93	445	1,994	2,543	956		6,047
Medical				18	113	553	3,045		3,729
Dental			1	3	24	62	140	261	491
Veterinary				5	33	82	80	70	270
Sanitary						153	169	249	571
Medical administration		1	4	13	51	68	36	30	203
Finance			46	138	508	1,237	987	1,097	4,013
Engineering		1	16	67	257	532	357	1,203	2,433
Ordnance		1	1	18	121	248	261	722	1,372
Signal			2	8	45	107	88	123	642
Chemical warfare					11	91	540		371
Chaplains			1	12	88	148	77	45	34
Military intelligence					6	7	11	10	86
Military police					26	21	7		1,333
Staff specialist			9	16	112	335	362	497	7,734
Cavalry			6	21	112	997	1,445	4,843	2,630
Field artillery			43	64	342	343	413	1,729	19,291
Coast artillery			6	10	129		4,184	10,443	8,041
Infantry			76	217	1,015	3,356	1,243	6,018	
Air service			9	19	151	601	8	14	30
General service									
Total	2	62	361	1,309	5,995	13,342	15,889	30,530	67,390

The House of Representatives on 19 Jan. 1923 passed the Army Bill carrying the budget for the fiscal year ending 30 June 1924 and amounting in all to \$333,000,000. This provides for the present Regular Army of 125,000 men and 12,000 officers and includes an amendment which increased the appropriation for river and harbor work (popularly known as "The Pork Barrel") from \$37,000,000 to \$56,589,910. The chairman of the Appropriations Committee in protesting against this increase declared "This is a waste of money on creeks over which not one pound of commerce will ever be carried."

On the same day a motion to reduce the Army to 100,000 men offered by Representative Sisson of Mississippi was rejected by a vote of 167 to 43. The Senate, 10 days later, increased the total amount of the army appropriations to \$340,341,396. No change was made in the Rivers and Harbors provision of \$56,000,000.

Of the money appropriated in the Army Bill the estimates for actual military purposes including the support of Regular Army, National Guard, Organized Reserves, fortifications, camps, rifle practice, etc., amounts to \$264,115,367.

An interesting comparison is afforded by the current budget for the French army of 630,000 men amounting to about \$261,514,300. In 1914 the French army budgeted for numbered 834,000 men. Since 1914 the increase in the cost of army material and payments in France has been in the proportion of 1 to 3.5.

EDWIN WINTHROP DAYTON,
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ARSENIC. Because of its increasing use as an insecticide and because in the efforts to exterminate the cotton boll weevil, the compound calcium arsenate has been found to be the most effective agency known, unusual interest has developed in the production of white arsenic, generally known simply as arsenic. A report of the United States Geological Survey states that the largest users of refined arsenic are the manufacturers of insecticides, who use the greater part of their purchased domestic and refined arsenic in making lead arsenate. It was stated that in 1922 the lead arsenate manufactured was about five times more than the combined output of all other arsenic compounds including calcium arsenate, paris green and Bordeaux mixture. Six western smelting plants handling copper and lead ores are equipped with arsenic refineries and made white arsenic, crude and refined, in 1922. The price of white arsenic in New York in 1922 ranged from six cents a pound in January to 15½ cents a pound in December. Lead arsenate, as paste, was quoted at 8 to 14 cents a pound; red arsenic at 12 to 13 cents a pound and calcium arsenate at 11 to 20 cents a pound. Production of refined and crude arsenic in the United States in 1922, according to the Geological Survey's estimates, amounted to 10,947 short tons; sales of crude arsenic to 1,366 tons. All crude arsenic sold was used in making sodium arsenate. Production of refined white arsenic, having a purity of 99.5 per cent or more, amounted to 9,581 tons, valued at \$1,486,000, or 7¼ cents a pound. Stocks of domestic arsenic on hand 1 October were reported as 1,230 tons and the quantity to be made between 1 Oct.

1922 and 1 May 1923 was estimated at 3,400 tons. The Department of Agriculture estimated that in 1923 approximately 50,000 tons of calcium arsenate will be required in those parts of the cotton growing States where the boll weevil is most prevalent. The compound calcium arsenate contains about 40 per cent of white arsenic.

ARSPHENAMIN. See MEDICINE AND SURGERY, ADVANCEMENT OF.

ART. See ARCHITECTURE, MUSIC, PAINTING AND SCULPTURE.

ARTS AND LETTERS, American Academy of. This organization was founded in 1898. The membership is limited to 50 and only those are eligible who have achieved distinction in art, music or literature. One member, Dr. Thomas Nelson Page (q.v.) died during 1922. The living members at the close of that year were: John Singer Sargent, Daniel Chester French, James Ford Rhodes, William Milligan Sloane, Robert Underwood Johnson, George Washington Cable, Henry van Dyke, William Crary Brownell, Basil Lanneau Gildersleeve, Woodrow Wilson, Arthur Twining Hadley, Henry Cabot Lodge, Edwin Howland Blashfield, Thomas Hastings, Brander Matthews, Elihu Vedder, George Edward Woodberry, George Whitefield Chadwick, George deForest Brush, William Rutherford Mead, Bliss Perry, Abbott Lawrence Lowell, Nicholas Murray Butler, Paul Wayland Bartlett, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole, Cass Gilbert, William Roscoe Thayer, Robert Grant, Frederick MacMonnies, William Gillette, Paul Elmer Moore, Gari Melchers, Elihu Root, Brand Whitlock, Hamlin Garland, Paul Shorey, Charles Adams Platt, Maurice Francis Egan, Archer M. Huntington, Childe Hassam, David Jayne Hill, Lorado Taft, Booth Tarkington, Henry Bacon, Charles Dana Gibson, Joseph Pennell. The officers of the Academy are: William Milligan Sloane, president; Robert Underwood Johnson, secretary; Thomas Hastings, treasurer; Brander Matthews, chancellor. Mr. Vedder died 29 Jan. 1923. On 22 Feb. 1923 the Academy opened its new building at Broadway and 157th Street, New York City.

ASBESTOS. Asbestos mining in the United States, which was pushed with unprecedented vigor in 1920, showed a great falling off in 1921, according to a report of the United States Geological Survey issued 19 Sept. 1922. The extreme peak of prices for crude asbestos was touched at the beginning of the year. By the time weather conditions were most favorable for active mining in the Arizona field, prices had begun to fall; by the end of summer, production had been much curtailed and by the end of the year, it had almost ceased. The asbestos sold in 1921 declined about 50 per cent in both quantity and value, compared with that marketed in 1920. Domestic asbestos marketed in the United States in 1921 totaled 438 short tons of chrysotile, valued at \$313,268, and 393 short tons of amphibole, valued at \$23,700, making a total of both kinds of 831 short tons, valued at \$336,968. These figures compare with 1,245 short tons of chrysotile, valued at \$661,907, and 403 tons of amphibole, valued at \$16,324 (total 1,648 short tons, valued at \$678,231) in

1920. In 1921, Arizona produced 413 short tons, California 25 short tons, Georgia and Idaho together 390 tons and Maryland three short tons. All the asbestos produced in Arizona and California was chrysotile, and all of that produced in the other States was amphibole.

Imports of asbestos in 1921 totaled 72,463 short tons, valued at \$2,948,302, compared with 167,558 tons, valued at \$9,120,253 in 1920. Of the 1921 importations, 71,412 tons came from Canada, which in 1920 supplied 162,717 tons.

The world's production of asbestos in 1921 was estimated at 106,500 metric tons, compared with 190,821 metric tons in 1920.

ASBURY COLLEGE, a non-sectarian co-educational institution, founded 2 Sept. 1890 and located at Wilmore, Jessamine County, Ky. In 1922-23 it had a faculty of 40 members, 567 students, property valued at \$650,000, and an income of approximately \$150,000. H. C. Morrison, D.D., LL.D., is president.

ASHLAND COLLEGE, a co-educational institution belonging to the Brethren Church, founded in 1878 and located at Ashland, Ohio. In 1922-23 it had a faculty of 14 members, 208 students, property valued at \$68,000 and an income of \$45,000. Edwin Elmore Jacobs, Ph.D., is president.

ASIA. See articles on the subdivisions of the continent, China, India, etc.

ASIA MINOR. See TURKEY; IRAQ.

ASIATIC CHOLERA. See MEDICINE AND SURGERY, ADVANCEMENT OF.

ASIR, Principate of. See ARABIA.

ASSOCIATION FOR INTERNATIONAL CONCILIATION, American. See PEACE AND ARBITRATION, INTERNATIONAL.

ASSOCIATION FOR INTERNATIONAL CO-OPERATION, American. See PEACE AND ARBITRATION, INTERNATIONAL.

ASPHALT. Among the paving materials, asphalt still retains its popularity. The latest official figures relative to the sale of asphalt in the United States are those for the year 1921. These show 44 concerns engaged in the production of asphalt and related bitumens during that year. Of the whole number, 15 produced native asphaltic materials, 16 manufactured asphalt from petroleum of domestic origin exclusively, 10 from petroleum of Mexican origin and three from both domestic and Mexican petroleum. The output of bituminous rock in 1921 increased 115 per cent in quantity and 237 per cent in value over 1920. In the production of asphalt from domestic petroleum, California with eight operators ranked first and Texas and Illinois each with four operators ranked second and third respectively in both quantity and value. The sales of native asphalt and related bitumens in the United States in 1921 increased 49 per cent in quantity and 64 per cent in value over the sales of 1920. The sales of asphalt manufactured from domestic petroleum, however, decreased 11 per cent in quantity and 25 per cent in value, while the sales of asphalt manufactured in the United States from Mexican petroleum decreased 13 per cent in quantity and 18 per cent in value. According to the United States Geological Survey, it is impossible to arrive at an exact statement of the asphaltic material consumed in the

United States, but the consumption in 1921 was estimated at 1,916,205 short tons compared with 2,023,665 short tons in 1920 and 1,445,178 short tons in 1919. Native asphalt and related bitumens sold in the United States in 1921 amounted to 296,412 short tons, valued at \$1,985,583 as compared with 198,497 short tons, valued at \$1,213,908 in 1920. Asphalt manufactured in the United States from petroleum and sold at refineries in 1921 was as follows: from domestic petroleum 624,220 short tons, valued at \$9,048,221, as compared with 700,496 short tons, valued at \$11,985,457 in 1920; from Mexican petroleum 908,093 short tons, valued at \$11,761,358 in 1921, as compared with 1,045,779 short tons, valued at \$14,272,862 in 1920. Asphalt and bituminous rock imported into the United States in 1921 totaled 128,535 short tons, valued at \$1,129,290 as compared with imports of 128,414 short tons, valued at \$1,067,616 in 1920. More than one-half of this came from Trinidad and Tobago. Asphalt and bitumen exported from the United States in 1921 amounted to 40,506 tons, valued at \$1,178,038 as compared with 51,216 tons valued at \$1,344,440 exported in 1922.

ASTOR, Nancy Witcher Langhorne (VISCOUNTESS), member of British Parliament: b. in Virginia. She is the daughter of the late Chiswell Dabney Langhorne of "Mirador," Greenwood, Va., and was married in 1897 to Robert Gould Shaw of Boston, Mass., from whom she was divorced in 1903. In 1906 she was married to Waldorf Astor (now Viscount Astor), son of William Waldorf, the first Viscount Astor. She is the second woman to be elected to Parliament, but the first to take her seat, the first woman being the Countess Markievicz elected on the Sinn Fein ticket. When Maj. Waldorf Astor succeeded to the title and had a seat in the House of Lords, his seat in the House of Commons was vacant; and his wife announced her determination to try for it herself. She, therefore, stood for Plymouth on the Unionist ticket, and, after an exciting contest, won over her Labor and Liberal opponents on 15 Nov. 1919. She took her seat on 1 Dec. 1919, introduced by the Premier and Mr. Balfour. Her appearance created the deepest interest. For the first time in history two women were admitted to the press gallery. Lady Astor wore a dark blue tailor-made suit with large white collar and velvet toque. She advanced up the floor of the House with Mr. Balfour on her right and Mr. Lloyd George on her left. The only point differing from ordinary procedure was that she did not remove her hat. Her entrance was greeted with hearty cheers and later she received many congratulations. After taking the oath and signing the roll, she shook hands with the Speaker and passed out of the House behind his chair. Presently she returned and took her seat at the corner of the second bench below the gangway on the opposition side (to the Speaker's left). In the spring of 1922 she came to the United States to attend the Convention of the National League of Women Voters in Baltimore and also visited her old home in Virginia. On arriving in New York she gave an address at the Town Hall, to the League of Women Voters in which she voiced the following ideas: "I can conceive of nothing worse than a man-governed world

except a woman-governed world—but I see the combination of the two going forward and making civilization more worthy of the name of civilization based on Christianity, not force—a civilization based on justice and mercy. I feel men have a greater sense of justice and we of mercy. They must borrow our mercy and we must use their justice. We are new brooms: let us see that we sweep the right rooms." She was again elected to Parliament for the Sutton Division of Plymouth on 15 Nov. 1922. Lady Astor has achieved fame for her audacious speeches and witty repartee. She has five children: Robert Gould Shaw; the Hon. Phyllis Nancy Astor; the Hon. Francis David Langhorne Astor; the Hon. Michael Langhorne Astor; and the Hon. John Jacob Astor. She is a sister of Mrs. Charles Dana Gibson of New York.

ASTRONOMY. On 21 Sept. 1922 the path of a total eclipse of the sun of more than average duration extended across the Indian Ocean, the northern part of Australia, and neighboring islands. It attracted unusual interest because it afforded an exceptional opportunity for testing Einstein's Theory of Relativity. If the theory of relativity is correct, rays of light from a distant star will be bent a little as they pass by a large mass such as the sun. Since the bright rays of the sun blot out the stars apparently in its neighborhood, the question can be put to the test only at the time of a total eclipse. Six well-equipped expeditions occupied stations at various places along the path of totality. Some failed because of unfavorable weather. The Lick Observatory party, under Professor Campbell, was successful in getting all the desired plates and on 11 April 1923 it was announced that the results were in exact accord with the requirements of the Einstein Theory.

Mars was exceptionally near the earth and favorably situated for observation during the middle and late summer months. The outstanding new feature observed was a white oblong patch, about 400 miles by 800 miles, that appeared suddenly on 9 July near the planet's equator. It was gray on the 10th and had vanished by the 13th. It was observed and photographed by E. C. Slipher at the Lowell Observatory.

Of all the planets, Venus is nearest like the earth in size, density, surface gravity, and period of revolution. It has a considerable atmospheric envelope which seems to be cloud filled, and astronomers have generally believed that its atmosphere, like that of the earth, contains free oxygen and water vapor. If so, the conditions on its surface would apparently be favorable for life. But Drs. Charles E. St. John and Seth B. Nicholson, of the Mount Wilson Solar Observatory, have made a spectroscopic examination of Venus with an excellence of instrumental equipment not heretofore equaled, and they have been wholly unable to find any evidence of either oxygen or water vapor in the atmosphere of this planet. While it is barely possible that these gases are present and were not detected because the light received from it penetrates only a little distance into the planet's atmosphere, it is probable that astronomers will be compelled to revise their ideas respecting the habitability of our nearest planetary neighbor.

The cause of the luminosity of extended diffuse nebulae has given rise to much speculation. An extended investigation by Dr. E. P. Hubble, of the Mount Wilson Solar Observatory, furnishes strong support for the simple theory that usually they shine by reflected light that they receive from neighboring stars.

Great progress has been made in measuring the diameters of the stars at the Mount Wilson Solar Observatory by Professor Michelson's interferometer method. It had been shown about two years ago that Betelgeuse, the brightest star in the constellation Orion, has a diameter of about 250,000,000 miles, or a volume about 27,000,000 times that of the sun. This red star is a variable, and the astonishing result now seems to be shown that its diameter changes appreciably with its brightness. The diameter of deep red Antares, in the constellation Scorpius, was found to be still greater, or 375,000,000 miles. On the other hand Aldebaran, in the constellation Taurus, is only 33,000,000 miles in diameter, while Sirius, the brightest star in the sky is less than twice the diameter of the sun, or 1,430,000 miles. It has been established that the apparent diameters of most of even the brightest stars are too small to be determined with existing means, and consequently a new interferometer with a possible extreme separation of its mirrors of 75 feet, or about five times the greatest separation in the present one, is being constructed. Presently a large amount of reliable information will be available in a domain that was considered inaccessible only a few years ago.

There has been recently a very rapid increase in knowledge of the dimensions of the space occupied by the several hundreds of millions of stars that constitute the visible universe, or galaxy of stars. Almost every new fact has shown that it is larger than it had previously been supposed to be. Dr. Harlow Shapley, of the Harvard College Observatory, has concluded from a study of the great globular star clusters that the equatorial diameter of the galaxy is of the order of 100,000 light years (a light year is the distance light travels in one year at the rate of 186,330 miles per second), and that its shortest diameter is one-twentieth or one-thirtieth as great. The data are admittedly subject to considerable uncertainty and other astronomers incline to more moderate estimates. Professors Kapteyn and van Rhijn, of Holland, by a somewhat different line of attack, reach results a little less than one-seventh of those of Dr. Shapley.

While there is yet much uncertainty respecting the dimensions of the space occupied by the galaxy, knowledge respecting the distances to the nearer stars is rapidly increasing. Many observatories are engaged in determining the apparent positions of a relatively near star with respect to more distant ones as seen from two parts of the earth's orbit, and from the differences in apparent positions the distances of the near star. The fact has been established that in the region of space where the sun now is the average distance between adjacent stars is from five to 10 light years. Many of the relatively near stars are very faint, while most of the bright stars are very remote. It follows from

these facts that the stars differ greatly, in fact many thousand-fold, in intrinsic luminosity. Dr. Walter Adams, of the Mount Wilson Solar Observatory, has developed a method of determining stellar distances based on the apparent brightness of the stars and their spectral types, which is rapidly giving a large amount of precious information.

It has been a noteworthy fact that although the intrinsic luminosities of the stars differ greatly, their masses vary much less widely. In no really well determined case has the mass been found heretofore to be more than about 16 times that of the sun, or less than one-tenth that of the sun. Now Dr. J. S. Plaskett, of the Dominion Observatory at Victoria, British Columbia, has found by spectroscopic means a star whose mass is at least 140 times that of the sun. The star would be very bright if it were not so far away, but its distance of 10,000 light years reduces it to the limits of visibility to the unaided eye.

One of the most interesting questions now before astronomers is whether there are galaxies of stars beyond our own. The suggestion has repeatedly been made that the spiral nebulae, which exist in great numbers, are such distant galaxies. Evidence bearing on the question is rapidly being accumulated. Dr. van Maanen, of the Mount Wilson Solar Observatory, finds relative internal motions in the larger spirals that point very strongly to the conclusion that these objects are in and a part of our galaxy. On the other hand, Dr. V. M. Slipher, of the Lowell Observatory, finds such very great velocities along the line of sight (from 200 to 1,000 miles per second) that they can scarcely belong to our system. Lundmark, of the Mount Wilson Solar Observatory, concludes that they are exterior to our galaxy, that some of those observed near the poles of the Milky Way are distant 2,000,000 light years, and that their masses are of the order of 100,000,000,000 times that of the sun.

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FOREST RAY MOULTON,
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ATHLETICS. See SPORTS.

ATLANTA UNIVERSITY, a non-sectarian co-educational institution for colored students, chartered in 1867; opened in 1869 and located at Atlanta, Ga. In 1922-23 it had a faculty of 37 members, 600 students, property valued at \$292,191.48; endowment of \$172,208.35 and an income of about \$68,000. Myron W. Adams was acting president in January 1923.

ATLANTIC CHRISTIAN COLLEGE, a co-educational institution, founded in 1902 and located at Wilson, N. C. Though non-sectarian, it is controlled by the Disciples of Christ. In 1922-23 it had a faculty of 10 members, 92 students (college grade), property valued at \$125,000, and an income of \$40,000. H. S. Hilley, A.B., is president.

AUDITION, Advances in. See PHYSICS.

AUGSBURG SEMINARY, a Lutheran Free Church institution, co-educational in college department, founded in 1869 and located at Minneapolis, Minn. In 1922-23 it had a faculty of 19 members, 163 students, property valued at \$125,000 and an income of \$50,000. George Sverdrup, M.A., is president.

AUGUSTANA COLLEGE AND THEOLOGICAL SEMINARY, a Lutheran, co-educational institution founded in 1860 and located at Rock Island, Ill. In 1922-23 it had a faculty of 33 members, 1,000 students, property valued at \$522,503.19 and an income of \$190,669.38. Dr. Gustav A. Andreen, D.D., is president.

AURORA COLLEGE, an Advent Christian co-educational institution, located at Aurora, Ill. It was founded 3 Jan. 1893 at Mendota, Ill., and was moved to Aurora 3 April 1912. In 1922-23 it had a faculty of 17 members, 76 students in the college and 26 in the academy. On 31 July 1922 its property was valued at \$451,552 and the income for the year ending that date totaled \$50,334.81. Orrin Roe Jenks, D.D., is president.

AUSTIN COLLEGE, a Presbyterian co-educational institution, founded in 1849 and located at Sherman, Texas. In 1922-23 it had a faculty of 19 members, 433 students, property valued at \$650,000, and an income of \$50,000. Thomas S. Clyce, LL.D., is president.

AUSTRALIA, Commonwealth of, a self-governing Dominion of the British Empire, comprising the continent of Australia and its dependencies. The Commonwealth consists of the six colonies (now called Original States) of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania. On 1 Jan. 1911, the Northern Territory was transferred by South Australia to the Commonwealth and the same day a part of New South Wales of about 940 square miles was vested in the Commonwealth for the purpose of forming a Federal Territory within the confines of which at Canberra a federal capital is to be built.

Area and Population.—The following table gives the area and population of each of the states and territories (population figures are those from the census of 4 April 1921):

STATES AND TERRITORIES	Area in sq. miles	Population 1921
New South Wales.....	309,432	2,099,763
Victoria.....	87,884	1,531,529
Queensland.....	670,500	757,634
South Australia.....	380,070	495,336
West Australia.....	975,920	332,213
Tasmania.....	26,215	213,877
North Territory.....	523,620	3,870
Federal Territory.....	940	2,572
Commonwealth.....	2,974,581	5,436,794

In 1906 the administration of Papua or British New Guinea was transferred to the Commonwealth and to this German New Guinea has been added. In 1920 there were in the Commonwealth 51,552 marriages, 136,406 births and

56,289 deaths. In the same year there were 109,109 immigrants and 81,330 emigrants, an excess of 27,779. The above figures are of the white population only; there are in addition about 100,000 aborigines. The chief cities are: Sydney (pop. 828,700); Melbourne (743,000); Brisbane (289,000); Adelaide (257,000); Perth (144,000); and Hobart, Tasmania (51,000).

Education.—Education is a state matter and consequently there are no statistics for the Commonwealth as a whole. In New South Wales instruction is compulsory between the ages of seven and 14. Instruction is free in the state primary and superior public schools and in the high schools. In 1920 there were 3,393 government schools, including 27 high schools, 2,059 public primary schools, 504 provisional schools, 144 half-time schools, 41 evening continuation schools and a number of miscellaneous schools. These schools have a registration of 304,373 pupils, 9,204 teachers and an average attendance of 234,657. Expenditure on the public school system of the state in 1920 amounted to \$15,000,000. In the same year there were 678 private

Tasmania was established in 1890 and has about 250 students.

In Victoria education is strictly secular and compulsory between the ages of six and 14. For the ordinary subjects it is free. There are 2,280 state schools with 6,518 teachers and a total enrollment of 235,292 pupils. Secondary education is for the most part under private control or under proprietary bodies usually connected with some religious denomination. There are 486 registered schools with 1,991 teachers and an enrollment of 56,684 pupils. There are 24 technical schools, 20 junior technical schools, 30 high schools, 39 higher elementary schools and five schools of domestic arts. There are 14,173 students in technical schools.

Education is compulsory and free in Western Australia. There are 695 state schools with 48,102 pupils and 128 private schools with 12,151 pupils. There is a university at Perth. The total amount annually spent on education is about \$2,500,000.

Religion.—The chief religious denominations are shown in the following table:

DENOMINATION	New South Wales	Queensland	South Australia	Tasmania	Victoria	West Australia
Church of England.....	734,000	212,702	113,781	88,158	475,203	109,435
Roman Catholic.....	412,013	137,086	50,964	28,581	286,433	56,616
Presbyterian.....	182,911	75,560	22,567	15,735	234,553	26,678
Methodist.....	151,274	59,920	100,402	24,975	176,662	34,348
Congregational.....	22,655	.....	13,357	.....	.....	6,203
Baptist.....	20,679	13,715	21,863	4,757	.....	4,801
Lutherans.....	7,087	24,235	26,681	.....	.....	.....
Jews.....	7,660	672	765	.....	6,270	1,790

schools with 73,749 pupils and 3,780 teachers, including 458 Roman Catholic denominational schools with 2,471 teachers and 60,196 pupils. There is a university at Sydney with 3,397 students. There are four denominational colleges affiliated to the university. There is also a technical college with several branch schools.

In Queensland education is also free and compulsory. There are 1,638 state schools, including 12 high schools, with 4,349 teachers and an average attendance of 94,602 pupils. There are ten secondary schools with 110 teachers and 1,595 pupils and 12 high schools with 1,270 pupils. In addition there are 157 private schools with 928 teachers and 20,006 students. There are 17 technical schools with 11,863 students. Queensland University was opened in 1911 at Brisbane. It has now 406 students and 28 members of the faculty. In South Australia education is secular, free and compulsory. There are 998 schools, including 21 high schools, 12 domestic art and six woodwork centres. The number of children under instruction during 1920 was 75,991. In 1874 a university was established at Adelaide. There are 172 private schools with 14,141 pupils and a number of special schools.

Tasmania has a compulsory attendance law between the ages of seven and 14. About 90 per cent of primary teaching is in state schools while secondary schools are about one-half endowed and half state. There are four technical schools and four junior technical schools with a total enrollment of 1,470. The University of

Finance.—In his annual address to the House of Representatives, Mr. Bruce, then Federal Treasurer of Australia, stated as follows: "The estimated revenue for 1922-23, totaling \$312,591,250, includes \$140,000,000 customs and excise, \$76,250,000 income tax, and \$48,250,000 post office, telegraph and telephone receipts. The estimated expenditure is \$310,118,405, showing an estimated surplus of \$2,472,785. Of the accumulated surplus, estimated at \$34,514,935, \$16,000,000 is to be used in reduction of taxation and the encouragement of agriculture and manufactures. The proposed remission of taxation includes the increase of the general exemption from \$520 to \$1000 for all taxpayers." Speaking of the national debts the Treasurer said: "The gross Commonwealth debt, totaling \$2,080,352,545, shows an increase in the year ended 30 June 1922 amounting to \$71,752,420. The total national debt of Australia, including the Commonwealth and the States, is \$4,210,000,000, compared with the pre-war debt of only \$1,695,000,000."

Economic Situation.—The financial data in the table following show the fundamental structure upon which the economic structure of Australia depends. In the comparison of years the last normal pre-war year, 1913-14, and the years since the termination of the war were chosen to illustrate the gradual return to normal. However, high wages and the new standard of living brought about by the war have so permeated Australian economic life that it is hardly pos-

AUSTRALIA

PERTINENT FACTORS IN AUSTRALIA'S ECONOMIC SITUATION.

ITEMS	1913-14	1918-19	1919-20	1920-21
Public debt.....	£294,472,486	£396,356,149	£417,309,772	£458,408,900
Checking deposits.....	149,827,568	249,58,254	265,628,592	282,556,351
Savings deposits.....	83,559,933	128,525,541	136,903,154	153,147,477
State revenue.....	47,269,039	58,232,944	70,071,743	81,733,281
New South Wales.....	18,298,625	23,448,166	28,650,496	34,031,396
Victoria.....	10,736,961	13,644,088	15,866,184	19,054,475
Queensland.....	6,973,259	9,415,543	11,293,743	12,601,031
South Australia.....	4,222,766	5,798,313	6,582,788	7,151,366
West Australia.....	5,205,343	4,944,850	5,863,501	6,789,565
Tasmania.....	1,238,085	1,581,984	1,815,031	2,105,448
Commonwealth revenue.....	21,741,775	44,716,918	52,783,162	65,517,608
State expenditures.....	46,561,907	58,962,524	72,046,447	83,218,877
New South Wales.....	17,701,851	23,233,398	30,210,013	34,476,892
Victoria.....	10,717,642	13,023,407	15,752,459	18,941,698
Queensland.....	6,962,516	9,587,532	11,266,910	12,591,201
South Australia.....	4,604,130	5,876,811	6,457,039	7,543,640
West Australia.....	5,340,754	5,596,864	6,531,725	7,476,290
Tasmania.....	1,235,014	1,644,512	1,828,301	2,189,156
Commonwealth expenditures.....	23,160,733	45,119,681	50,581,354	64,624,087
Specie and bullion:				
Exports.....	3,798,735	9,190,203	6,634,216	5,448,740
Imports.....	1,553,544	7,071,039	46,086	20,144
Expenditure for loans.....	16,625,557	63,622,780	46,672,373	28,250,227
Ordinary loans.....	12,154,439	1,429,891	1,286,786	4,101,726
War loans.....	14,471,118	62,192,889	45,385,587	24,148,501
Bank clearances.....	801,745,000	1,443,095,000	1,896,860,000	57,828,800
Note issue.....	14,333,008	55,569,765	56,154,694	33,657,493
Held by banks.....	7,743,210	35,316,039	33,569,791	24,171,307
Held by public.....	6,589,798	20,253,726	22,584,903	

1914-15.

Not available.

Average, August to December.

sible that a pre-war level will ever be reached again.

The total Australian war expenditure for the six years ending 30 June 1921 was \$2,192,918,765. Of this amount \$1,672,906,680 is charged against loans and \$520,017,085 against revenue.

Production and Industry.—Wheat is the principal agricultural product of Australia and ranks next to wool as an export commodity. It is produced in all the Australian states, but is grown chiefly in the moist coastal belt of the states of New South Wales, Victoria and South Australia. The actual area sown in wheat in Australia in 1921 and 1922 averaged between 9,000,000 and 10,000,000 acres, but the potential area adapted to wheat-raising is much larger. The total acreage of the wheat belt between regions having an average rainfall of 7½ to 16 inches during the growing season, from April to October, comprises approximately 124,000,000 acres. The latest official statistics of the wheat yield of 1921 and 1922 are as follows:

acres were planted in oats and yielded 13,106,500 bushels; 283,000 acres were planted in barley, the yield from which was 4,193,600 bushels; 275,000 acres were planted in Indian corn and yielded 7,100,000 bushels. Hay yield for 1922 amounted to 3,125,000 tons and potatoes to 325,100 tons. The yield from the sugarcane crop was 1,360,000 tons. The condensed and preserved milk industries has assumed considerable importance. Australia has assumed considerable importance. Australian factories have a capacity to produce fully six times the quantity of this product consumed locally; consequently a considerable overseas trade has been worked up chiefly with Eastern markets. The latest live stock census showed 12,700,000 head of cattle, 75,500,000 sheep, 696,000 swine, and 2,421,000 horses. Wool production in 1921-22 amounted to 648,466,000 pounds, valued at £38,972,547 for greasy wool and £9,002,752 for scoured and tops. The value of the mutton and lamb produced the same year was £2,139,615. The mineral output is mainly dependent upon the settlement of the labor troubles prevailing

ACREAGE UNDER WHEAT, AND YIELD, BY STATES.

STATE	1920-21		1921-22	
	Grain area	Yield	Grain area	Yield
New South Wales.....	Acres 3,124,370	Bushels 53,715,840	Acres 3,169,200	Bushels 45,285,500
Victoria.....	2,295,865	39,469,635	2,600,000	44,110,589
South Australia.....	2,167,646	34,256,914	2,340,000	26,325,000
Western Australia.....	1,275,675	12,348,080	1,303,712	13,304,850
Queensland.....	177,320	3,707,357	139,198	2,292,455
Tasmania.....	28,284	565,874	25,000	500,000
Total.....	9,669,160	143,963,690	9,576,110	131,817,894

Other crops of importance are: Oats, barley, Indian corn, hay, potatoes, sugarcane, beet sugar, wine grapes and fruits. In 1922, over 1,000,000 during the post-war period. The chief mining products in the order of importance are coal, gold, silver, lead, copper, and tin. Coal produc-

tion in 1921 amounted to 11,211,000 tons. The output of gold was valued at \$21,110,000 the same year.

There are 17,113 manufacturing establishments, the chief of which are those connected with the refining of the agricultural products of the country, such as meat packing, wool carding and spinning, preserved milk, knit goods, etc.

VALUE OF THE MANUFACTURING INDUSTRIES OF THE COMMONWEALTH.

	No. of establishments	Hands employed	Value of output
1915.....	15,092	321,071	£169,086,700
1916.....	15,010	316,752	172,574,845
1917.....	15,179	321,670	206,376,646
1918.....	15,421	328,049	225,753,611
1918-19.....	15,588	340,475	249,056,888
1919-20.....	16,291	376,734	292,536,608
1920-21.....	17,113	386,639	324,586,519

The growth of manufacturing in New South Wales since the enactment of the federal tariff is shown by a return issued by the government statist. Up to 1 Jan. 1922 nearly £60,000,000 had been invested in the state's secondary industries, which give employment to 145,000 people. The number of establishments increased from 3,367 to 5,837 between 1901 and 1921; the number of employees from 66,000 to 145,000; salaries and wages from £4,900,000 to £25,600,000; the value of plant and machinery from £5,800,000 to £31,000,000, and the total value of output from £25,600,000 to £137,800,000. The value added to raw materials was £43,128,000.

Commerce and Trade.—Australian trade returns for the fiscal year ended 30 June 1922, received by the United States Department of Commerce, show a favorable balance of £26,-

885,794, compared with an unfavorable balance of £32,416,049 in 1921. Total imports for the year 1921-22 were £101,063,661—a decrease of £62,267,479 from 1920-21; and exports were £127,949,455, compared with £131,925,091 for the preceding year.

Not only was the volume of imports substantially reduced, but the values also shrunk considerably since the fiscal year ended 30 June 1921. The reasons given for this condition were the unprecedented value of importations in the previous year and the high customs duties imposed under the tariff which became operative on 25 March 1921. Concurrently, the valuation of goods and products in the world's markets showed such a marked decline that reduced costs had an important bearing on trade figures.

All of the states had increased import values in 1920-21 when contrasted with 1919-20, but all except Queensland had smaller export values. The Northern Territory experienced a sharp falling off in both imports and exports, particularly the latter. The distribution of the trade among the various Australian political divisions in 1920-21 is shown in table above.

The shares of the principal countries in Australia's foreign trade during 1919-20 and 1920-21 were:

AUSTRALIA'S FOREIGN TRADE, BY COUNTRIES.

COUNTRIES IMPORTS FROM	1919-20	1920-21
United Kingdom.....	£43,112,670	£84,562,488
Canada.....	2,640,383	4,646,352
India.....	4,507,602	7,137,356
New Zealand.....	2,392,560	2,302,436
Straits Settlements.....	1,363,905	1,605,988
Other British possessions.....	5,390,342	4,511,471

Total, British Empire...	59,407,462	104,766,091
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United States.....	23,768,030	35,601,735
Cuba.....	2,478	1,661,063
Belgium.....	170,588	1,343,089
Japan.....	4,262,000	5,348,109
Netherlands East Indies.....	7,647,070	7,486,029
Norway.....	755,810	1,887,394
Sweden.....	748,814	2,728,396
Other foreign countries.....	2,212,040	2,979,920

Total foreign countries..	39,566,830	59,035,735
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Total imports.....	98,974,292	163,801,826
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EXPORTS AND RE-EXPORTS TO

United Kingdom.....	80,784,096	67,519,740
Egypt.....	2,769,331	6,607,172
India.....	2,439,935	2,193,006
New Zealand.....	7,743,744	7,780,763
South African Union.....	3,044,351	3,049,507
Straits Settlements.....	6,216,398	2,121,090
Other British possessions.....	5,636,177	4,164,830

Total, British Empire...	108,634,032	93,436,108
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United States.....	11,129,937	9,965,575
Belgium.....	4,263,608	6,845,925
Canary Islands.....	271,131	1,416,240
France.....	6,671,878	6,409,862
Germany.....	16,520	1,457,119
Italy.....	3,771,544	2,547,810
Japan.....	7,229,501	3,117,572
Netherlands.....	11,005	1,264,530
Netherlands East Indies.....	3,119,766	2,568,619
Other foreign countries.....	4,704,587	3,129,552

Total, foreign countries..	41,189,477	38,722,804
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Total exports and re-exports.....	149,823,509	132,158,912
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AUSTRALIA'S FOREIGN TRADE, BY STATES.

STATES	1920-21
IMPORTS	
New South Wales.....	£72,466,306
Victoria.....	57,608,777
Queensland.....	11,840,442
South Australia.....	12,381,973
Western Australia.....	7,219,538
Tasmania.....	2,264,933
Northern Territory.....	19,857
Total imports.....	£163,801,826
EXPORTS²	
New South Wales.....	£48,302,709
Victoria.....	33,890,767
Queensland.....	15,082,350
South Australia.....	17,648,895
Western Australia.....	10,163,036
Tasmania.....	1,328,475
Northern Territory.....	14,449
Total exports.....	£126,430,681
RE-EXPORTS²	
New South Wales.....	£4,299,089
Victoria.....	981,194
Queensland.....	89,534
South Australia.....	125,024
Western Australia.....	231,624
Tasmania.....	1,454
Northern Territory.....	303
Total reexports.....	£5,728,231

¹ Includes £4,943,296 gold for minting on account of the Imperial Government. ² States of final shipment.

¹ Does not include the value of stores shipped in Australian ports on board overseas vessels.

The following table shows the foreign trade of the Commonwealth since 1915:

TOTAL VALUE OF AUSTRALIA'S EXTERNAL TRADE, 1915-22.

YEAR	Value		
	Total trade	Imports	Exports
1914-15.....	£125,024,413	£64,431,837	£60,592,576
1915-16.....	152,522,887	77,744,566	74,778,321
1916-17.....	174,184,161	76,228,679	97,955,482
1917-18.....	143,763,670	62,334,449	81,429,221
1918-19.....	216,299,135	102,335,159	113,963,976
1919-20.....	248,797,801	98,974,292	149,823,509
1920-21.....	295,960,738	163,801,826	132,158,912
1921-22.....	229,013,116	101,063,661	127,949,455

The following table shows the trade of Australia in the principal commodities during the last two years:

ARTICLES	1920-21	1921-22
Imports		
Textiles (not apparel).....	£35,643,872	£24,257,690
Machinery (not agricultural)....	9,071,324	7,336,518
Apparel.....	8,345,000	5,394,931
Metal manufactures.....	7,958,124	4,800,065
Petroleum spirit.....	4,123,573	3,099,975
Drugs and chemicals.....	4,264,093	2,564,699
Exports		
Wool:		
Greasy.....	25,302,348	38,972,746
Scoured.....	6,422,696	7,795,704
Tops.....	2,049,588	1,207,048
Wheat.....	34,473,350	28,644,175
Butter.....	11,067,076	7,987,558
Gold and silver.....	5,424,819	4,359,121
Flour.....	4,948,924	5,519,917

Principal Exports from Australia.—Wheat, wool and butter are the outstanding items of Australia's export trade, with shipments of beef, condensed milk, wheat flour, crude tallow, coal and copper ingots also exceeding £1,000,000 in value in 1920-21.

PRINCIPAL EXPORTS FROM AUSTRALIA.

ARTICLES	1919-20	1920-21
Butter.....	£3,301,695	£11,067,104
Beef.....	2,479,248	3,819,841
Lamb.....	1,632,544	825,796
Mutton.....	3,830,020	752,862
Rabbits and hares.....	762,936	432,745
Meats, preserved in tins.....	2,796,574	374,688
Milk:		
Dried or in powder form.....	118,001	118,550
Condensed, etc.....	1,487,160	2,066,211
Wheat.....	22,568,633	34,473,350
Flour (wheaten).....	8,906,973	4,948,750
Jams and jellies.....	1,218,884	550,393
Tobacco, manufactured....	249,610	339,536
Hides and skins:		
Cattle.....	1,504,109	375,412
Rabbit and hare.....	3,672,425	975,911
Kangaroo.....	570,169	172,225
Opossum.....	1,327,885	560,010
Sheep, woolled.....	1,967,354	1,155,643
Wool:		
Greasy.....	38,416,481	25,304,295
Scoured and washed.....	9,169,643	6,426,167
Tops.....	2,957,679	2,049,588
Boots, shoes, and slippers.....	828,662	673,194
Tallow, unrefined.....	2,845,095	1,348,714
Coal.....	832,807	2,238,996
Coke.....	58,655	115,992
Copper:		
Contained in matte....	189	192,408
Ingots.....	2,765,374	2,230,766
Iron and steel, bar, rod, ingots, blooms, etc.....	227,006	230,417
Lead, pig.....	2,690,432	667,919
Tin, ingots.....	957,205	497,264
Zinc, bar, block, etc.....	97,589	139,026
Leather.....	2,313,485	941,574
Timber, undressed.....	463,666	1,268,390
Gold specie.....	5,321,053	5,303,423

Communications.—The results of the financial operations of the merchant fleet of the government of the Commonwealth of Australia are not set forth in detail in annual reports. As the commonwealth fleet is in competition with private steamship lines the Australian government takes the view, similar to that held for some time by the United States Shipping Board, that the full publication of the financial operations of the government fleet would disclose information valuable to competing steamship lines under the British and other flags. Up to September 1922 the only information available to the public as to the financial operations of the commonwealth fleet was that presented to the Australian Parliament in an address on 16 Nov. 1921 by Mr. Hughes. This statement covered the operations of the fleet up to 30 June 1921, or for nearly five full years of the ships bought in England and of the seized German ships. The first two of the Australian-built ships were not delivered until the last half of 1919 and the next four during the year 1920; the remaining seven Australian-built ships and the five 15-knot ships built in England were not delivered until the last half of 1921 or in 1922.

The broad features of the financial condition of the Australian fleet, as shown by the Premier's speech, may be concisely summarized in the following table:

ORIGIN OF STEAMERS	No.	Gross tons	First cost	Net earnings
Bought in England in 1916.....	11	47,937	£1,621,578	£2,993,245
Ex-enemy ships.....	18	83,021	909,315	4,066,266
Built in Australia (1919-21).....	10	33,447	1,822,472	84,588
Building in Australia (1921-22).....	7	23,414	1,353,611	.....
Building in England (1921-22).....	5	69,226	5,000,000	.....
Total.....	51	257,045	10,706,976	7,144,099

To the net earnings for the five years are to be added for brokerage and commissions £181,995, for the net earnings of sail vessels £41,382, and for the net gain on the sale of ships £74,343, in all £297,720, making the total net earnings £7,441,819. The government, of course, has not paid itself interest on the first cost of the ships, and it has made no allowance for depreciation. A report stated that for the year which ended 30 June 1922 operating expenditures were £2,722,474, operating receipts £2,718,837, a deficit of £4,317, while capital expenditures were £3,811,813. The capital investment seems to have been made out of the £7,441,819 net profits of the war-time and armistice period.

Some of the Victoria railways are being electrified. The great trouble with the Australian lines is the different gauges varying from 2 feet 6 inches to 5 feet 3 inches. There are in addition 968 miles of private railways open for general traffic and 1,841 miles of private lines not open for general traffic. There are 8,292 postoffices in the Commonwealth and several wireless stations.

The table below from 'The Statesman's Year Book' for 1922 furnishes statistics of the Australian state railways.

Defense.—The defense policy of Australia comprises the principle of universal training of a citizen army. The war experiences have led to some modifications of the old defense organization but this principle of universal training remains. In 1922 the peace strength was reduced from 118,000 to 30,000 all ranks, which was believed would still insure an organized force for the national defense, provided there was time after the outbreak of war to train the rank and file. The army reserve consists of 48,000 men of war service.

Sydney is a first class naval station and the headquarters of the British Australian fleet, which by agreement must be maintained at a strength not less than one armored cruiser, first class, two second class cruisers, four third class cruisers, four sloops and a naval reserve of 25 officers and 700 seamen. The Royal Australian Navy consists of the battle cruiser *Australia* (to be scrapped under the Disarmament Treaty), the light cruisers, *Adelaide*, *Melbourne*, *Sydney*, *Brisbane*, *Pioneer* and *Encounter*; the flotilla leader, *Anzac*, the river class destroyers, *Huon*, *Parramatta*, *Swan*, *Torrens*, *Warrego* and *Yarra*; five "S" class destroyers; seven submarines; four sloops and a few old vessels now of little value.

There is a combined naval and military air corps which facilitates the all-round training of personnel in naval and military flying. The permanent units are destined for service with the fleet. The organization of the corps is proceeding but is yet far from complete.

As nearly as may be the number of representatives is twice that of the Senate. The legislative powers of the Federal Parliament comprise shipping, commerce, finance, banking and currency, defense, posts, telegraphs, census and statistics, copyright and arbitration in interstate disputes, external affairs, etc. Money bills must originate in the Lower House and may not be amended by the Senate. No religion may be established. The state parliaments have legislative power in all matters not specifically referred to the Federal Parliament, but a state law inconsistent with a Federal law yields to the latter. The executive power is exercised in the name of the King by a Governor-General, assisted by an Executive Council not exceeding nine ministers of state, who must be members of the Federal Parliament.

In 1922 the Governor-General was the Right Honorable Henry William, Baron Forster of Lepe. The Prime Minister and Minister of External Affairs was Right Hon. William M. Hughes. The High Commissioner of Australia in London was Sir Joseph Cook.

History.—The beginning of 1922 saw a remarkable return to normal economic conditions in Australia. The wool market had largely recovered from the depression that marked the previous year. As a result of the Washington Conference the battle cruiser, *Australia*, was placed in reserve in Sydney harbor on February 9 and 450 of her men dismissed. The bubonic plague spread in Queensland during the summer and a plague of grasshoppers and ants descended on South Australia. The much mooted project for the unification of railway gauges was dropped after a conference of the state pre-

STATISTICS OF AUSTRALIAN RAILWAYS, STATE AND FEDERAL, FOR THE YEAR ENDED 30 JUNE 1921.

STATE OR FEDERAL LINES	Miles open to traffic	Cost of construction and equipment	Passengers carried (number)	Freight and live stock carried (tons)	Gross receipts	Operating expenses
New South Wales.....	5,043	£79,318,917	120,735,000	15,563,000	£14,267,000	£11,033,000
Victoria.....	4,267	58,287,897	134,046,000	7,573,000	9,796,000	7,835,000
Queensland.....	5,752	40,005,868	27,735,000	3,868,000	5,279,000	5,049,000
South Australia.....	2,333	19,105,510	23,788,000	2,682,000	2,942,000	2,655,000
Western Australia.....	3,538	18,062,354	17,732,000	2,604,000	2,720,000	2,422,000
Tasmania.....	629	5,240,276	2,688,000	672,000	600,000	476,000
Federal:						
Trans-Australian.....	1,051	7,053,900	23,000	54,000	213,000	256,000
Oodnadatta.....	478	2,282,934	56,000	95,000	75,000	112,000
Federal Territory.....	5	48,144	.....	5,000	600	800
Northern Territory.....	199	1,709,932	5,000	23,000	27,000	49,000
Total.....	23,295	£231,115,732	326,808,000	33,139,000	£35,919,600	£29,887,800

Constitution and Government.—Legislative power is vested in a Federal Parliament consisting of the King's representative, a Senate and a House of Representatives. The Parliament must meet at least once every year. There must be at least six senators for each of the six original states. The Senate is renewed by one-half every three years, but in case of a deadlock with the Lower House it may be dissolved and a new Senate elected in its entirety. Members of the Lower House are elected for three years unless the House is sooner dissolved.

miers with the Federal Prime Minister. The cost, estimated at \$26,000,000, was considered prohibitive for the present. The chief concern of the country was the immigration problem. To offset the growing pressure of Chinese and Japanese labor the Federal Premier, Mr. Hughes, sanctioned an agreement between the British and Italian governments for an extensive immigration of Italian farmers to take up unsettled lands in Australia. King George gave his assent in March to the bill for the abolition of the Queensland Upper House, which the

Prime Minister called "the home of the reactionary interests." In New South Wales a bill was introduced to break up the large estates, of which there were 72 in 1919 exceeding 50,000 acres each. The bill limits the valuation to £20,000 and empowers the state to acquire the excess by eminent domain. A bill for the protection of the New Guinea natives passed the Federal House in March. It abolishes forced labor and provides new schedules of import and export duties. The Federal Government decided to assist the farmers by a subsidy of one-fourth of a penny a pound on beef. The compulsory government pool of wheat imposed in wartime was succeeded by voluntary pools in South Australia and in New South Wales. There is a compulsory pool in West Australia. On 21 July the Federal Government refused to agree to the appointment of German consuls in Australia. Trade with Germany was resumed on 1 August but the Australian Tariff Board proposed a duty of 75 per cent to prevent the flooding of the country with German goods. The Washington treaties were ratified by the Senate on 27 July. The compulsory arbitration law in South Australia was attacked by the workers who regarded it as a government scheme to lower wages and the standard of living. The events in the Near East aroused interest in Australia because thousands of Commonwealth troops fought in that area during the war. The Premier offered to send troops if necessary but his action was denounced by the Labor Council, which threatened a general strike in the event of war. Efforts were made by the Federal Government for co-operation with the states to increase the volume of immigration and to try to make the inflow of population reach 100,000 yearly. A coal crisis developed in October due to labor disputes. A British cotton delegation visited Australia and finished its survey on 31 October. The greatest satisfaction was expressed over the prospect of Australia as a cotton producer. Soil had been seen capable of growing the world's best cotton. Dissatisfaction became general with the Premier, Mr. Hughes. It was alleged that he held on to the quasi-autocratic powers conferred upon him during the war years and at times his treatment of the Opposition was said to savor of the dictatorial. The elections, held 16 December, resulted in his re-election by a majority of 5,000, but most of his colleagues were beaten. The allotment of preference votes for members of the Federal House of Representatives showed that the party of the Premier, the Nationalist, second in standing. Labor secured 30 seats; the Nationalists, 28 seats; Country Party and Liberals, 17 seats. The results in the Senate returns indicated an increase in strength of the Labor representation. Mr. Hughes was succeeded in the Premiership by Stanley Bruce.

AUSTRIA, a republic of Central Europe, bounded north by Germany and Czechoslovakia, south by Italy and Yugoslavia, east by Hungary and west by Switzerland. The present area of the Republic, as defined by the Treaty of Saint Germain at the close of the Great War, is 30,766 square miles and the population numbers 6,131,445. The pre-war area of Imperial Austria was 115,903 square miles with a popu-

lation of 28,571,934. Of its former provinces there remain Upper and Lower Austria, Salzburg, Styria, Carinthia, and about one-half of Tyrol and Vorarlberg. The other provinces were lost as a result of the war and are now incorporated in Czechoslovakia, Yugoslavia, Italy, or Poland. Part of the Burgenland was ceded to Austria by Hungary early in 1922. The President of the Republic is Dr. Michael Hainisch, who was elected 9 Dec. 1920 for a term of four years. Vienna is the capital.

Under the new constitution adopted 1 Oct. 1920 all special privileges have been abolished and all citizens are granted equal rights. There is an Assembly or Second Chamber the members of which are elected by popular suffrage for a four-year term. The Second Chamber or Bundesrat is chosen by the Provincial Diets in proportion to population, but its powers are largely advisory.

The Austrian flag is made of three horizontal bars of which the central bar is white and the top and bottom bars are red.

According to the latest enumeration the population of the chief cities of Austria is as follows:

Baden.....	14,000
Graz.....	157,644
Innsbruck.....	55,650
Klagenfurt.....	26,147
Linz.....	94,070
Salzburg.....	36,749
Vienna.....	1,841,326
Wiener-Neustadt.....	35,360

Education.—Elementary education is compulsory in Austria from the age of 6 to 14, but there are numerous exemptions after the age of 12 is reached. The latest statistics give 4,750 elementary schools with 27,000 teachers and 903,000 pupils. There is an excellent system of secondary schools, maintained by the provinces, towns, or by private individuals. These number 138 with a total registration of 40,200 pupils. There are three state universities: Vienna with 11,000 students; Graz with 2,000 students and Innsbruck with 1,500 students. In addition there are technical schools with a total of 5,000 students, normal schools with about an equal number of students, and theological schools and colleges.

Religion.—Over 94 per cent of the population are of the Roman Catholic faith. About 2½ per cent are Protestants and about 3 per cent are Jews. Religious liberty is guaranteed by the constitution.

Courts.—There are numerous district courts, county courts and jury courts. In addition there are 17 provincial and three higher provincial courts. The highest or supreme court of the land is the Oberster Gerichtshof located in the capital.

Agriculture.—This industry is well developed and forms the main occupation of the people. In the last year for which returns are available 378,000 acres were planted to wheat; 758,000 acres to rye and 267,000 acres to barley. The yield was 211,000 metric tons of wheat, 398,000 tons of rye and 143,000 tons of barley. Oats, potatoes and turnips are grown in large quantities. The foodstuffs grown are not sufficient for the inhabitants and in consequence the importation of food is imperative. There

are great timber tracts in Austria and these add considerably to the national wealth. In 1922 there were about 250,000 horses, 915,000 cows, and 600,000 other cattle.

Mineral Products.—Coal is produced in several localities. About 150,000 tons of anthracite were mined last year and approximately 2,500,000 tons of lignite. One-half million tons of iron ore were produced in the same period. Copper, lead, salt and zinc are mined in lesser quantities.

Industries.—Automobiles, pianos and textiles still remain the important industries of the country but as to the quantities produced no reliable statistics are available.

Commerce and Trade.—In the years following the war Austria has imported great quantities of coal, flour, rice, grain and building materials. Rubber, textiles and glass are among the lesser imports. For the last year for which figures are available (1920) the total volume of imports was 6,100,000 tons. The exports included in the same year 360,000 tons of lumber, 125,000 tons of various ores, 45,500 tons of chemicals, and 24,500 tons of furniture. The most of the trade is with Czechoslovakia, Germany and Great Britain. In 1922 Austrian exports were valued at 1,047,000,000 gold kronen and imports at 1,591,000,000 gold kronen. Quantity figures were not available 1 April 1923.

Banking and Finance.—According to the latest returns the notes in circulation of the Austro-Hungarian Bank amounted to 61,300,000,000 kronen secured by about 12,000,000 kronen in gold bullion. The new budget for the calendar year 1923, estimated the total expenses at 8,500 billion crowns and total receipts at 6,100 billion crowns, leaving a deficit of 2,400 billion crowns. The budget places expenses of the administration at 6,300 billion crowns. These calculations were based on salaries according to the cost of living index at the middle of November, when the dollar exchange was 72,000 crowns. The rate of 1 March 1923, was approximately the same. Other items included in the new budget are. Revenues, 4,700 billion crowns, net losses from business enterprises (chiefly railways), 2,000 billion crowns; profits from monopolies, 1,300 billion crowns. The national debt is 15,500 billion crowns, including 1,500 billion crowns for Austria's share in the debt of the old monarchy.

Army.—Under the terms of the Treaty of Saint Germain, Austria has organized an army of six infantry regiments, for the capital district, six regiments of the Alpenjager for Upper Austria, the Tyrol, and adjoining provinces and two battalions for the Burgenland. There are complementary forces of six cycle battalions, six squadrons of cavalry and some artillery and technical units.

Navy.—The navy has gone out of existence since the war as the country now has no sea coast.

History.—Under a decree passed in the last month of 1921 all owners of foreign currency, checks or credits abroad were obliged to deposit such property with the government in exchange for bonds bearing 5 per cent interest. The object of the measure was to raise the exchange of the Austrian krone. Foreigners resident in Austria were not exempted from the operation

of the law, which imposed severe penalties on all recusants. The government also made plans to pledge the famous imperial art treasures, valued at \$50,000,000, with an American syndicate, the money thus raised to be used for the purchase of foodstuffs. In January there was a new issue of currency totalling 17,000,000,000 kronen, making a total of all issues of 160,000,000,000 kronen. There was considerable discussion relative to the Austrian Crown jewels, of which the greater part were held by various Swiss banks. It was expected that the Austrian government would lay claim to the jewels on the ground that they were the property of the state and not the private property of the Hapsburgs. The National Council ratified the treaty made with Czechoslovakia in December 1921, the chief provisions of which were that the two signatory states bound themselves to carry out fully the provisions and terms of the treaties of Saint Germain and the Trianon and undertook not to allow upon their territory any political or military organization hostile to the integrity or security of the other party. On 15 March the Senate of the United States passed a resolution for the release of America's lien of \$25,000,000 upon Austrian state assets in order to enable the latter to raise a new foreign loan for the relief of famine sufferers. In the opening month of spring the government was obliged to reinforce by 2,000 men the frontier troops because of the incursions of Hungarian bandits, believed to be government troops in disguise, into the border district of the Burgenland. Hungary had previously sent a demand to the Interallied Boundary Commission in charge of this frontier for the restoration of more than one-fourth of the disputed territory. There was a resultant flare of indignation and protest in Austria. As a result of the stipulations by Great Britain and France as a condition of credits to be extended to the Austrian government the assembly passed a reform bill which provided for sweeping measures of taxation and economy. In May the police nipped a monarchist plot fomented by the Austrian branch of the Pan-Germans. Permanent child-feeding in Austria was established by a bill passed by the Parliament on 22 May for the continuance under state control of the program of the American relief administration. This bill provided for the feeding by the state of 5,000 public school children. In this connection it was reported that the American Relief Administration up to 20 March had fed 200,000,000 meals to Austrian children. At that date it was feeding 175,000 children, 900 professors, 10,000 students and 17,000 others. On 24 May the Schober cabinet resigned. The new chancellor was Ignatius Seipl, the leader of the Christian Socialists and a Roman Catholic priest. In June the Austrian crown became practically valueless, the quotation being 10,000 crowns to the dollar. On 13 July the quotation was 21,000 crowns to the dollar. During the summer months the country became more and more disorganized and embarrassed because of the currency depreciation and the rise in the cost of living. The Seipl government undertook measures for the economic restoration of the country by establishing a bank of issue to remedy the depreciation of the currency, by inaugurating

economy in the various government projects, insisting on abandoning to private enterprise all undertakings that could not be made to pay their way and by cutting down government staffs. On 21 July the Reparations Commission agreed to the release of the revenues from the forests, salt mines and state demesnes for 20 years to be used as security for the new bank of issue. The revenues from the customs and from the tobacco monopoly were released as security for a foreign loan. On 4 August exchange stood at 52,000 crowns to the dollar. The Chancellor tried to effect a rapprochement with the Little Entente but was not successful; his efforts in Berlin met with a similar fate after which he proposed a form of agreement with Italy. The latter, fearing complications with the Little Entente and probably with France declared such an agreement impossible. On 27 September the League of Nations formulated a plan for the rehabilitation of Austria, which it felt would obviate the union of that nation with any of the conflicting groups in eastern Europe. Briefly the plan provided for a loan to Austria of 650,000,000 gold crowns (\$135,000,000), guaranteed by Great Britain, France, Czechoslovakia and Italy. A finance court commissioner was to be stationed at Vienna to oversee the expenditures under the loan. The sovereignty of Austria and its frontiers are guaranteed, while Austria bound herself not to alienate her independence. The plan was set in motion on 3 November by the passage of a law in the Austrian Parliament authorizing the issue of bonds for 130,000,000 gold crowns to cover budget deficits and stop the printing of paper money. These bonds were secured by the customs and tobacco receipts and are to be retired in 1923 or as soon as a long term loan can be negotiated under the plan. See also LEAGUE OF NATIONS.

AUTHORS' LEAGUE OF AMERICA, an organization founded in 1912 in New York to render assistance to authors in the marketing of their MSS. Its members receive information regarding editors, managers, producers and others with whom authors come in contact in publishing their works. To simplify its operations the League is now divided into the guild of American Dramatists, the guild of Free Lance Artists, the Authors' Guild and the guild of the Screen Writers. These guilds operate separately but each is subject to the Authors' League. The membership in 1922-23 was 1,400. Its president was J. L. Williams, and secretary, E. Schuler. Its headquarters is at 22 E. 17th Street, New York City.

AUTOMOBILE CHAMBER OF COMMERCE, National, the trade association of motor car and motor truck manufacturers, and the successor of the National Association of Automobile Manufacturers, organized in November 1900, and of the Automobile Board of Trade. Its purpose is to undertake all those tasks which properly interest motor transportation in its entirety. For instance, it acts as a medium through which its members exchange without charge over 500 patents. In this way useless litigations and unimportant differences in design are eliminated, with resulting lower costs of production and lower prices of motor vehicles

to the public. The association campaigns for better highways, not merely by asking for appropriations, but by urging the view that all highways should be located where they will be most serviceable to the public and that funds should be set aside for maintaining the roads after being built. The Chamber endows campaigns for safety education in the schools, stricter traffic law enforcement and scientific study of traffic conditions. It aims to secure equitable railroad rates, recommends constructive legislation, encourages the extension of foreign trade, manages the two annual automobile shows at New York and Chicago, makes researches of market conditions here and abroad, outlines definite and equitable programs for taxation, furthers standardization in engineering, develops improved methods of servicing cars and trucks and strives to secure the adoption of policies which will make motor transportation of maximum service to the public. The headquarters of the Chamber is in the Marlin-Rockwell Building, 366 Madison Avenue, New York City. There are branches in Washington, D. C., Albee Building; Detroit, Mich., Ford Building. The officers are Charles Clifton, president; R. D. Chapin, vice-president; C. C. Hanch, second vice-president, passenger car division; Windsor T. White, second vice-president, motor truck division; A. J. Brosseau, secretary; H. H. Rice, treasurer. Executive officers, Alfred Reeves, general manager; J. S. Marvin, assistant general manager; S. A. Miles, show manager.

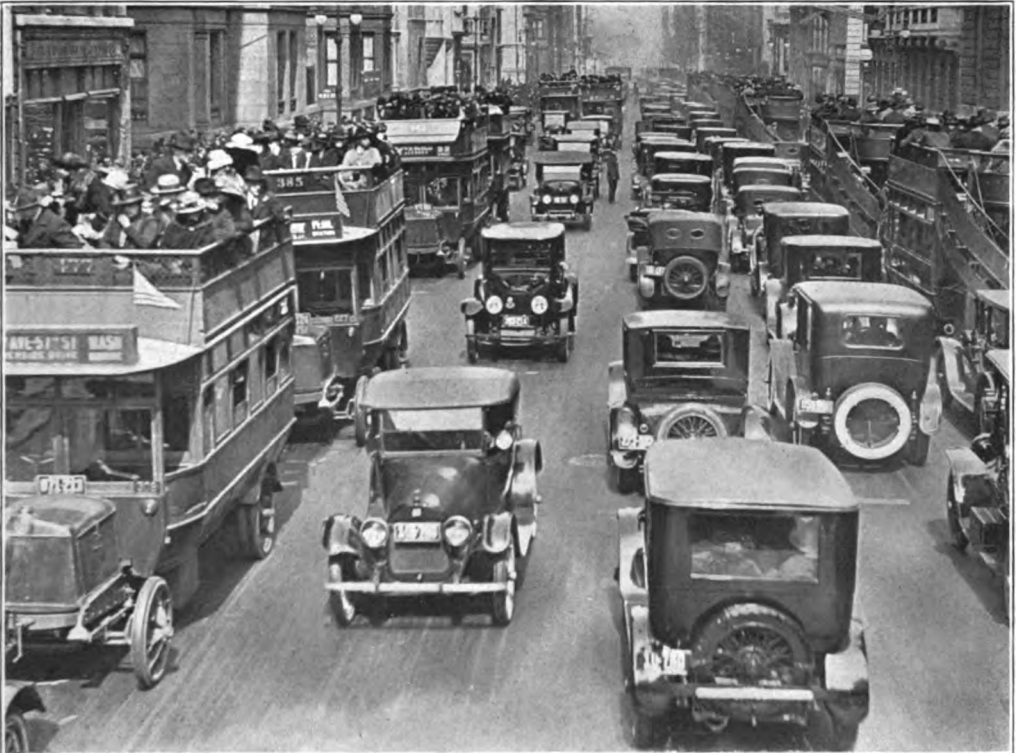
AUTOMOBILE RACING. See SPORTS (Sub-section Miscellaneous).

AUTOMOBILES. The outstanding features of the automobile industry during 1922 were the record production, according to figures supplied by the United States Department of Commerce, of 2,577,765 cars and trucks (2,334,790 cars—242,975 trucks), the continuation until late in the year of the price reductions which were started in the late summer of 1920 by Henry Ford, and further achievements in the standardization of materials and parts. Prior to 1922 the greatest number of cars produced in a single year was 2,205,000 in 1920. In 1921, 1,585,395 cars were produced, while in 1919 production totaled 1,868,310 cars. Production in January 1923 was: 221,697 passenger cars and 19,206 trucks.

The wholesale value of the cars and trucks manufactured in 1922, as determined by the National Automobile Chamber of Commerce, was \$1,558,567,000, of which \$1,374,487,000 represented the value of passenger cars and \$184,080,000 represented the value of trucks. The estimated average retail price of the passenger automobiles manufactured in 1922 was \$770 per car, compared with an estimated average retail price of \$900 per car in 1921. The estimated average retail price of the motor trucks manufactured in 1922 was \$1,050 per truck, compared with an estimated average price of \$1,326 per truck for the trucks manufactured in 1921. The average reduction in the retail price of pleasure cars in 1922 amounted to 14 per cent, while the average reduction in the retail price of trucks during the same year amounted to 21 per cent.

Closed cars manufactured during the year represented 35 per cent of the total number of

AUTOMOBILES



1. Automobile traffic, Fifth Avenue, New York

2. A few of the nearly 12,000,000 automobiles in the United States

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passenger automobiles manufactured or approximately 885,000 cars. In 1921 the number of closed cars manufactured was 302,528; in 1919, 154,255. Thus do the 1922 figures show the increasing popularity of that type of vehicle. Generally speaking, the year was regarded as the best in the history of the industry. It undoubtedly was for a number of companies manufacturing low and medium priced cars. However, certain concerns experienced financial difficulties.

Complete statistics for 1922 showing the number of establishments engaged in the manufacture of automobiles, the number of persons employed thereby, the costs of materials, etc., were not available at the time this was written. Compilations of comparative figures for the years 1921 and 1919 have been made by the United States Bureau of Census and will be found interesting. In 1921, according to the Census Bureau, there were in the United States 368 concerns engaged in the manufacture of automobiles, compared with 315 engaged in the same industry in 1919. The number of automobiles turned out in 1921 was 1,585,395, valued at \$1,320,175,169, compared with 1,868,310 machines valued at \$1,722,626,704 turned out in 1919. Of the 368 establishments operating in 1921, 64 were located in Michigan, 50 in Ohio, 39 in Illinois, 30 in Pennsylvania, 28 in Indiana, 26 in New York, 25 in California, 19 in Wisconsin, 12 each in Massachusetts and Missouri, eight in New Jersey, six each in Iowa and Texas, five each in Kentucky, Minnesota and Washington, three each in Connecticut, Georgia and Oklahoma, two each in Colorado, Nebraska, North Carolina, South Carolina and Virginia, one each in Alabama, Arkansas, the District of Columbia, Louisiana, Maryland, New Hampshire, Oregon, Tennessee and West Virginia.

The number of persons engaged in the industry in 1921 was 164,999, compared with 242,922 in 1919. The average number of wage earners employed in 1921 was 142,903, compared with 210,559 in 1919. Salaries and wages paid in 1921 totaled \$278,912,691, compared with \$379,381,674 disbursed in 1919. Materials used in 1921 cost \$1,104,497,012, while the cost of those used in 1919 was \$1,578,651,574.

The number of touring cars manufactured in 1921 was 898,150, compared with 1,224,347 manufactured in 1919; the number of roadsters and runabouts manufactured in 1921 was 195,545, compared with 171,458 manufactured in 1919; the number of business vehicles manufactured in 1921 was 147,009, compared with 312,379 manufactured in 1919; the number of delivery wagons manufactured in 1921 was 15,060, compared with 17,272 manufactured in 1919; the number of trucks manufactured in 1921 was 91,236, compared with 101,734 manufactured in 1919.

These statistics, it was asserted in the Census Bureau's report, relate to manufacturers whose chief product was assembled automobiles and do not include establishments engaged primarily in making bodies, parts and accessories for automobiles.

Automobile Registration.—According to the United States Bureau of Public Roads, the total number of automobiles of all kinds

registered in the United States in 1922 was 12,238,375, an increase of 1,815,716, or 17.6 per cent over the number registered in 1921. These figures mean that there is in the United States a car of some sort for every 8.7 persons. New York is the only State wherein the motor cars registered exceed 1,000,000 in number. Its total for the year was given as 1,002,293. California was second with 861,807 cars. Ohio was third with 858,716 cars and Pennsylvania was fourth with 829,737 cars.

Automobile registration fees collected by the various States during the year exceeded \$150,000,000, an increase of approximately \$30,000,000 over similar collections in 1921. Every State in the Union showed an increase over the 1921 figures in the number of cars registered. In 1921, four States—Georgia, South Carolina, Montana and South Dakota—showed combined decreases totaling 17,734 cars as compared with their 1920 figures. However, in 1922, as compared with 1921, they showed a combined gain of 27,539 cars; thus giving them a net increase over their 1921 registration of 9,805 cars.

It is estimated that there are 3,500,000 motor vehicles (3,300,000 passenger cars and 200,000 trucks) on farms in the United States, and that the number of motor cars serving suburban communities is 780,000. According to the National Automobile Chamber of Commerce, 7,500,000,000 passengers are carried annually in motor cars. There was a marked increase during the year in the number of motor buses used for the transportation of passengers, indicating the increasing popularity of this method of travel. Motor-bus lines were operated in 108 cities of the United States during 1922, while the number of motor buses in use throughout the country was estimated at 40,000. A total of 12,000 schools use motor buses to transport pupils to and from the schools. Fifty-six street railway companies operate motor-bus lines, while 40 railroads use motor vehicles on short lines. There were 1,500 motor express lines in the United States in 1922. The estimated amount of farm products annually transported in motor vehicles is 134,400,000 tons, while the annual haulage of freight of all classes by motor trucks is estimated at 1,430,000,000 tons.

According to Alfred Reeves, general manager of the National Automobile Chamber of Commerce, the number of persons employed in the motor vehicle and allied lines in 1922 was 2,431,400. Passenger car dealers number 38,000; motor truck dealers, 25,000; public garages, 48,000; service stations and repair shops, 63,000, and supply stores, 63,700.

It was estimated that 819,169 motor vehicles of various descriptions were discarded during 1922. Most of them were said to have been produced six or seven years before; and had therefore outlived their usefulness. The number of new cars needed for replacement in 1923 has been estimated at 1,800,000.

The table on the following page, compiled by the Bureau of Public Roads, United States Department of Agriculture, shows the motor vehicle registrations, licenses, revenues and gasoline tax of Continental United States by States for the year 1922.

AUTOMOBILES

MOTOR VEHICLE REGISTRATIONS, LICENSES, REVENUES AND GASOLINE TAX

STATE	Passenger cars		Motor trucks and commercial cars	Trailers ^a	Motor cycles	Registration revenues		Gasoline tax	
	Total motor cars and trucks	Private passenger cars	Taxis, buses and cars for hire ^a			Total gross	Amount applicable to State road work	Total gross	Amount applicable to State road work
Alabama.....	90,052	77,473	2,710	.....	638	\$1,262,800 00	\$939,074 14	19	\$157,468 73
Arizona.....	38,034	38,034	.....	.....	434	216,598 26	216,598 26	.....	104,037 99
Arkansas.....	84,596	76,696	7,900	82	258	1,310,196 60	311,373 60	208,075 98	.....
California.....	861,807	822,304	39,413	4,861	16,301	8,384,069 22	3,785,355 00	644,865 94	644,865 94
Colorado.....	152,977	151,309	1,668	62	2,770	3,567,714 84	3,567,714 84	689,247 53	.....
Connecticut.....	124,608	124,608	2,447	117	4,386	3,567,714 84	3,567,714 84	.....	.....
Delaware.....	24,560	24,560	.....	85	427	353,716 50	353,716 50	.....	.....
Dist. of Columbia.....	52,792	52,792	2,560	.....	2,357	1,538,342 26	1,034,009 01	693,221 41	693,221 41
Florida.....	116,170	94,175	2,767	455	1,456	1,830,047 61	1,830,047 61	739,188 55	.....
Georgia.....	143,423	126,498	16,925	1,136	1,703	812,943 72	780,237 68	.....	.....
Idaho.....	53,874	49,393	4,481	.....	8,156	7,882,482 02	2,999,588 50	.....	.....
Illinois.....	781,974	682,250	99,724	2,508	3,570	2,999,588 50	2,999,588 50	.....	.....
Indiana.....	469,930	413,410	56,520	100	2,315	3,100,000 00	3,100,000 00	.....	.....
Iowa.....	500,158	468,736	31,422	.....	1,042	2,140,444 31	2,140,444 31	.....	.....
Kansas.....	327,194	303,725	23,469	.....	1,509	1,756,226 42	1,756,226 42	.....	.....
Kentucky.....	154,021	136,627	17,394	.....	4,981	2,824,843 91	2,824,843 91	.....	.....
Louisiana.....	102,284	87,003	15,281	499	10,047	5,685,527 05	5,685,527 05	.....	.....
Maine.....	92,539	78,697	13,842	.....	3,240	8,385,022 17	3,278,266 87	.....	.....
Maryland.....	165,624	150,523	15,101	.....	1,000	1,179,803 00	1,179,803 00	.....	.....
Massachusetts.....	385,231	325,307	59,924	.....	2,792	3,512,182 97	3,512,182 97	.....	.....
Michigan.....	578,210	518,127	60,083	.....	1,856	3,031,699 93	3,031,699 93	.....	.....
Minnesota.....	380,557	341,322	39,235	.....	1,856	3,031,699 93	3,031,699 93	.....	.....
Mississippi.....	77,571	71,000	6,571	448	1,112	1,246,098 46	1,246,098 46	.....	.....
Missouri.....	392,523	352,929	39,594	.....	1,883	6,251,418 50	5,991,949 61	.....	.....
Montana.....	62,650	55,682	6,968	414	1,856	1,246,098 46	1,246,098 46	.....	.....
Nebraska.....	256,654	233,658	22,996	.....	1,63	2,715,331 58	2,715,331 58	.....	.....
Nevada.....	12,116	12,116	.....	.....	1,63	2,715,331 58	2,715,331 58	.....	.....
New Hampshire.....	48,406	42,270	6,136	.....	1,63	2,715,331 58	2,715,331 58	.....	.....
New Jersey.....	342,286	258,540	74,509	886	25,175	12,736,364 37	12,736,364 37	.....	.....
New Mexico.....	25,473	25,473	.....	3,417	1,190	2,715,331 58	2,715,331 58	.....	.....
New York.....	1,002,293	781,070	18,950	.....	766	698,931 70	698,931 70	.....	.....
North Carolina.....	182,550	163,600	2,972	5,389	15,330	7,888,992 38	7,888,992 38	.....	.....
North Dakota.....	99,052	96,080	2,972	.....	15,330	7,888,992 38	7,888,992 38	.....	.....
Ohio.....	858,716	740,884	117,832	.....	3,206	2,729,169 15	2,729,169 15	.....	.....
Oklahoma.....	249,659	249,659	.....	.....	1,936	3,340,519 58	3,340,519 58	.....	.....
Oregon.....	134,125	118,035	16,090	337	1,936	12,575,380 56	12,575,380 56	.....	.....
Pennsylvania.....	829,737	763,916	65,821	1,075	1,434	1,139,742 77	1,139,742 77	.....	.....
Rhode Island.....	66,083	51,804	14,279	68	659	743,232 00	743,232 00	.....	.....
South Carolina.....	95,239	88,018	7,221	.....	3,401	1,592,230 14	1,592,230 14	.....	.....
South Dakota.....	125,241	116,144	9,097	150	742	4,261,488 67	4,261,488 67	.....	.....
Tennessee.....	135,716	119,319	16,397	.....	856	779,455 00	779,455 00	.....	.....
Texas.....	526,238	526,238	.....	.....	2,846	2,467,346 93	2,467,346 93	.....	.....
Utah.....	49,104	41,942	7,162	.....	3,846	3,291,671 70	3,291,671 70	.....	.....
Vermont.....	43,881	41,241	2,640	.....	1,361	4,088,570 29	4,088,570 29	.....	.....
Virginia.....	168,000	145,000	23,000	200	5,718	316,849 50	316,849 50	.....	.....
Washington.....	210,716	176,074	34,642	.....	304	.....	.....	.....	.....
West Virginia.....	112,763	101,301	11,462	.....	.....	.....	.....	.....	.....
Wisconsin.....	382,542	356,143	26,399	96	.....	.....	.....	.....	.....
Wyoming.....	30,637	27,410	3,227	10	.....	.....	.....	.....	.....
Totals.....	12,238,375	10,890,112	69,459	29,328	182,714	\$152,047,823 74	\$117,093,116 92	\$11,923,442 61	\$6,474,178 11

NOTES TO TABLE OPPOSITE

¹ Does not include 19,926 non-resident cars nor 1,836 non-resident trucks.

² Approximate.

³ Devoted to road work in accordance with legislative appropriations.

⁴ A total of 65,141 re-registrations deducted pro rata from cars, trucks and motorcycles.

⁵ Includes \$28,707.62 of delinquent gasoline taxes.

⁶ Includes 4,763 commercial cars of less than one ton capacity.

⁷ For the first eleven months of 1922.

⁸ Of this amount \$414,330.00 was devoted to payment of interest and principal on State Highway Bonds and \$197,813.50 to administration of Highway Department, Auto Registration and Motor Enforcement Department.

⁹ For first six months of registration year July to December 1, 1922 inclusive.

¹⁰ Includes approximately 12,000 non-resident cars and 2,000 non-resident trucks.

¹¹ For seven months, June 1 to December 31 inclusive.

¹² For ten months, March 1 to December 31 inclusive.

¹³ For nine months, April 1 to December 31 inclusive.

¹⁴ Where no data are given these vehicles are included with private passenger cars.

¹⁵ No separate record, included with passenger cars.

¹⁶ For fiscal year ending June 30, 1922, data for calendar year not available.

¹⁷ State tax of one-fourth to one-half cent per gallon on all petroleum products except lubricating oils amounting to \$128,165.00 during 1922. Proceeds to general State Funds.

¹⁸ State Fees, toll oil inspectors, amounted to approximately \$360,000. Proceeds to State General Fund.

¹⁹ State inspection fee on gasoline of one-half mill per gallon.

²⁰ Devoted to financing of State highway bonds and remainder to road work.

²¹ Where blanks occur no data could be secured as to the number of trailers in the State.

Relative to the number of automobiles in the world the following returns covering the year 1921, except where otherwise specified, include the latest available data furnished by officials of the Departments of Commerce and State stationed in the countries named:

WORLD CENSUS OF AUTOMOTIVE VEHICLES.

(See footnotes at end of table.)

COUNTRIES	Pass. cars	Trucks	Motor cycles
Alaska.....	384	153	69
Algeria.....	13,000	1,500	
Angola.....	300	100	
Arabia.....	228	15	69
Argentina.....	77,637	776	2,500
Australia.....	78,517	3,900	37,751
Austria.....	8,223	3,506	3,474
Azores.....	159	3	20
Bahama Islands.....	197	83	7
Barbados.....	1,050	50	50
Belgium.....	30,000	6,000	20,300
Bolivia.....	300	65	15
Brazil.....	23,500	1,500	1,084
British South Africa.....	25,634	1,344	15,305
British Guiana.....	950	125	138
British Honduras.....	61	12	2
British Oceania.....	99	53	15
Bulgaria.....	500	150	50
Canada.....	473,263	36,407	9,713
Canary Islands.....	1,300	200	
Chile.....	7,285	608	197
China.....	6,984	437	792
Colombia.....	2,000	154	40
Costa Rica.....	245	23	18
Cuba.....	30,000	3,800	250
Czechoslovakia.....	7,750	1,600	2,075
Danzig.....	712	157	126
Denmark.....	17,581	4,679	14,241
Dominican Republic.....	1,800		
Dutch East Indies.....	18,000	4,000	3,500
Dutch Guiana.....	1,135		
Dutch West Indies.....	1,243		
Ecuador.....	600	27	30
Egypt.....	3,839	331	1,320
Estonia.....	166	88	53
Federated Malay States.....	3,475	333	1,045
Finland (Nov., 1922).....	1,131	623	837
Piume.....	110	115	120
France.....	1,201,040	94,836	45,995
French Guiana.....	1,110		
French Indo-China.....	13,000		
French West Africa.....	1,230		

COUNTRIES	Pass. cars	Trucks	Motor cycles
Germany (June, 1922).....	82,505	45,587	37,941
Gibraltar.....	105		195
Gold Coast.....	1,294		
Guatemala.....	500	47	60
Guadeloupe.....	500	40	
Greece.....	4,500	700	280
Haiti.....	541	81	28
Hawaii.....	15,000		
Honduras.....	112	20	20
Hongkong.....	573	22	329
Hungary.....	3,000	200	500
Iceland and Faroe Islands.....	1,145		
India.....	34,289	3,240	12,133
Italy.....	28,000	25,600	31,600
Jamaica.....	1,876	259	60
Japan.....	7,912	899	2,478
Jugoslavia.....	1,800	500	340
Latvia.....	1,160		
Liberia.....	117		
Lithuania.....	200	250	150
Madagascar (Sept., 1922).....	184	55	262
Madeira Islands.....	144	27	71
Malta and Valetta.....	411	18	200
Mauritius.....	1,600		
Mesopotamia.....	5,000		
Mexico.....	19,406	1,328	2,226
Morocco.....	2,255	404	1,003
Netherlands.....	20,000	2,740	25,000
Newfoundland and Labrador.....	600	25	25
New Zealand.....	35,000	2,500	25,000
Nicaragua.....	250	40	25
Norway.....	8,050	3,072	5,518
Palestine.....	700	100	100
Panama Republic.....	731	59	23
Panama Canal Zone.....	985	338	369
Paraguay.....	450	20	10
Peru.....	2,303	1,003	60
Persia.....	689		
Philippines.....	9,738	3,053	1,501
Poland.....	2,500	1,700	400
Porto Rico.....	5,537	1,119	
Portugal.....	10,000	600	5,000
Portuguese East Africa.....	230	12	51
Rumania.....	4,220	2,028	328
Russia (Soviet).....	13,000		
Salvador.....	400	15	20
Siam.....	1,800	150	450
Spain.....	35,000	6,000	4,000
Straits Settlements.....	6,090	739	1,502
Sweden (Sept., 1922).....	23,198	6,280	16,270
Switzerland.....	13,172	4,839	9,500
Syria.....	2,100	200	140
Trinidad.....	1,519	434	281
Tunis.....	2,047	233	321
Turkey.....	1,700	250	
Uruguay.....	12,050	450	610
Venezuela.....	3,000	350	150
Virgin Islands.....	309		
United Kingdom.....	353,271	145,000	335,796
Total, foreign countries.....	1,833,406	431,379	683,627
United States (Dec., '22) ²	11,025,377	1,331,999	210,000
Total, world.....	12,848,783	1,763,378	893,627

¹ Incomplete returns from countries furnishing 1920 registration as latest.

² In addition, there are 13,358 cycle cars in France.

³ Passenger-car statistics for the United States include trucks for five States not publishing separate returns of passenger cars and trucks.

NOTE.—The above figures were furnished during 1922 and generally cover 1921, except as indicated otherwise.

Automobile Exports.—Automobiles of all kinds, including chassis, exported from the United States during the calendar year 1922 totaled 78,235, valued at \$59,320,524, compared with 38,430, valued at \$42,869,618, exported during the calendar year 1921. The number of passenger cars exported during the calendar year 1922 aggregated 66,790, valued at \$51,049,616, compared with 30,950 such cars, valued at \$32,533,725, exported during the calendar year 1921. Motor trucks and buses, exclusive of electric vehicles, exported during the calendar year 1922 totaled 11,445, valued at \$8,270,908, compared

AUTOMOBILES

with 7,480 motor trucks and buses valued at \$10,335,893 exported during the calendar year 1921. A total of 276 electric trucks and passenger cars, valued at \$387,589, were exported during the first 11 months of 1922. No exports of such vehicles appear in the records of the Department of Commerce for 1921. From the standpoint of the number of cars exported, Australia was the United States' best customer, shipments thereto numbering for the calendar year 1922 11,236 cars, valued at \$8,716,930. During the calendar year 1921 shipments to Australia totaled 3,020 cars, valued at \$3,065,909. From the standpoint of value, Canada was the United States' best customer, shipments thereto numbering, for the calendar year 1922, 10,214 passenger cars, valued at \$10,569,481, compared with 5,243 cars, valued at \$7,187,865, shipped to Canada during the calendar year 1921. Shipments to Mexico during the calendar year referred to totaled 7,279 cars, valued at \$4,640,801, compared with 6,750 cars, valued at \$5,183,791, shipped to that country in 1921. Shipments to the United Kingdom were 4,315 cars, valued at \$3,345,706, in the calendar year 1922, compared with 888 cars, valued at \$830,018, shipped thereto during the calendar year 1921. Shipments to Belgium during the calendar year 1922 were 4,785 cars, valued at \$1,836,284, compared with 533 cars, valued at \$379,193, shipped thereto during 1921. Shipments of motor trucks and buses to Belgium in 1922 totaled 2,824, valued at \$735,650, compared with 169 trucks, valued at \$77,756, shipped thereto during 1921. Truck shipments to Canada during the calendar year 1922 were 1,259, valued at \$1,870,929, compared with 1,146, valued at \$1,798,855, for the calendar year 1921. During 1922, 1,059 trucks, valued at \$1,211,199, were shipped to Australia compared with 720 trucks, valued at \$1,194,900, shipped during 1921. Japan took 1,001 trucks valued at \$911,296, during 1922, compared with 756 trucks, valued at \$634,867, taken by her during the calendar year 1921.

Automobile Tires and Tubes.—The National Automobile Chamber of Commerce estimated that 36,340,000 automobile tires were manufactured in the United States during 1922, while the inner tubes manufactured during the first 10 months of the year numbered approximately 31,000,000. Peak production was attained in August, when 63 companies reported a total output of 2,905,200 tires and 3,803,224 inner tubes. There are approximately 155 companies engaged in the manufacture of automobile tires and inner tubes in the United States. Consumption of crude rubber used by these concerns during the first six months of 1922 totaled approximately 210,018,457 pounds, while the products turned out had an estimated sales value of \$239,458,658. Complete statistics showing the number of automobile tires and inner tubes manufactured during 1922 were not available but compilations by the United States Bureau of Census for the years 1921 and 1919 show a total of 27,267,400 pneumatic automobile casings, valued at \$376,940,000, manufactured in 1921, compared with 32,813,430, valued at \$603,361,000, manufactured in 1919. The number of inner tubes manufactured in 1921 was 32,023,400, valued at \$52,745,000, compared with 33,233,150 tubes, valued at \$81,247,000, manufactured in 1919. Solid tires for use on trucks manufac-

tured in 1921 numbered 401,380, valued at \$14,736,000, compared with 1,454,800 such tires, valued at \$43,917,000, manufactured in 1919.

During the first 11 months of 1922 there were exported from the United States 1,215,440 pneumatic casings for automobiles, valued at \$15,412,545. The United Kingdom took 317,714; Cuba, 86,078; Argentina, 81,688; Canada, 51,946; Mexico, 71,952; New Zealand, 44,595; Australia, 36,887. Pneumatic tubes for use in automobiles exported during the 11-month period referred to numbered 857,216, valued at \$1,649,525. Solid tires exported for automobiles and motor trucks during the same period numbered 49,803, valued at \$1,367,882.

Automobile Parts.—Automobile parts manufactured in the United States during 1922 had an estimated value of approximately \$400,000,000. The aggregate value of such products turned out during the first 11 months of the year was \$384,226,070. In 1921, according to the Federal Bureau of Census, there were 1,974 establishments operating which turned out products valued at \$407,917,000. These figures compare with products valued at \$692,171,000 turned out by 2,123 establishments in 1919 and products valued at \$129,601,000 turned out by 764 establishments in 1914. The number of persons engaged in the industry was 79,607 in 1921. Salaries and wages paid totaled \$125,952,000 in 1921.

Automobile parts exported during the first 11 months of 1922 totaled 146,987,047 pounds, valued at \$34,880,851.

Automobile Fuels.—Gasoline consumed in the operation of motor vehicles in the United States during 1922 was estimated at 5,300,000,000 gallons, compared with 4,506,706,000 gallons used in 1921. Considerable interest was aroused during the year by the announcement that a new motor spirit made from prickly pear juice mixed with other chemicals had proved so successful in tests in South Africa that a company with £100,000 capital had been organized to exploit it. This new production is called "Springbok" Motor Spirit. It was invented by A. C. de Villiers, an attorney of Edenburg in the Orange Free State, and the formula is a secret. According to press reports the spirit had been severely tested on various makes of cars and was highly recommended, being non-corrosive, odorless and equal to or better than gasoline in power and flexibility. A mileage of 22.4 was obtained in a six-cylinder car. Unlike some of the other substitutes, cars using it can be started easily in cold weather. In South America a considerable amount of alcohol in either its natural state or combined with other materials was used by motorists.

Automobile Accidents.—Statistics showing the number of deaths resulting from automobile accidents in 1922 were not available at the time this article was written. The latest authentic figures are those for the year 1921 supplied by the United States Bureau of Census. These, including only the fatal accidents which occurred in the 34 States constituting what is known as the "Registration Area" numbered 10,168, an increase of 1,065 over the number of similar accidents that occurred in the same territory in 1920. New York State registered the largest number of actual deaths with 1,632, an increase of 222 over the 1920 record. Among the municipalities, New York City led in the

number of deaths caused by automobiles with a total of 885, an increase of 112 over the 1920 record. Chicago was second with 569 deaths. The death list of 1921 by States in the Registration Area, as reported by the Census Bureau, was as follows: California, 876; Colorado, 121; Connecticut, 220; Delaware, 17; Florida, 104; Illinois, 887; Indiana, 266; Kansas, 166; Kentucky, 105; Louisiana, 97; Maine, 56; Maryland, 177; Massachusetts, 523; Michigan, 441; Minnesota, 216; Mississippi, 46; Missouri, 276; Montana, 48; Nebraska, 104; New Hampshire, 98; New Jersey, 484; New York, 1,632; North Carolina, 139; Ohio, 734; Oregon, 103; Pennsylvania, 1,060; Rhode Island, 83; South Carolina, 74; Tennessee, 134; Utah, 53; Vermont, 23; Virginia, 140; Washington, 202, and Wisconsin, 205. In the largest cities in the Registration Area the automobile fatalities were as follows: Baltimore, 100; Boston, 103; Chicago, 569; Cleveland, 148; Detroit, 133; Los Angeles, 165; New York, 885; Philadelphia, 190; Pittsburgh, 107; St. Louis, 119; San Francisco, 94, and Washington, 53.

Automobile Construction.—From the technical standpoint the year 1922 showed comparatively few, if any, radical innovations in the construction of automobiles, although numerous improvements and refinements were made. Practically all of the chassis showed mechanical betterments of one form or another. It was announced just before the close of the year that the General Motors Company was preparing to put on the market an air-cooled engine, which would be more or less of an innovation. It was also asserted that a number of concerns will adopt the four-wheel brake system, which has attained a certain degree of popularity in Europe, during 1923. Six-cylinder engines continued to be the favorites with the automobile users, and six-cylinder cars were to be had at the close of the year at prices ranging from less than \$1,000 to over \$10,000.

Much interest was manifested in a combination motor truck and power boat which was exhibited in New York City on 5 December. The machine was invented by Walter Christie, a former driver of racing automobiles. This combination truck and power boat carried a 3-inch regulation field gun mounted forward and travelled on land at the rate of 25 miles an hour. It had six sets of double wheels, the rear set so arranged as to not touch the ground when the machine was operated over smooth highways. In order to convert the machine into a motor boat propellers had to be affixed, the operation requiring only five minutes. After the exhibition on land, the truck, having been converted into a power boat, crossed the Hudson River in about 45 minutes. For use over rough roads the truck was equipped with an adjustable caterpillar tread, making it with this tread in place to all intents and purposes a tractor.

During the year the Ministry of Communications of Egypt sent six representatives to the United States to study automotive industry methods under the auspices of the Department of Commerce.

The relation of the automobile to other businesses is set forth in the following table com-

piled by Arthur Reeves, General Manager of the National Automobile Chamber of Commerce:

AUTOMOBILE'S RELATION TO OTHER BUSINESSES

Number of carloads of automobile freight shipped by railroad	400,000
Per cent of rubber supply used by automobile industry.....	83
Per cent of plate glass supply used by automobile industry....	30
Per cent of aluminum supply used by automobile industry.....	20
Per cent of iron and steel supply used by automobile industry....	4
Number of doctors using motor cars	110,000
Number of motor cars owned by corporations	600,000
Gasoline consumption (U. S.) 1922 (gals.).....	5,300,000,000
Average monthly surplus of gasoline (gals.).....	784,261,000
Gasoline consumption (U. S.) 1921 (gals.).....	4,506,706,000
Per cent of cars used more or less for business.....	90
Per cent of total car mileage used entirely for business.....	60

AVIATION. See AERONAUTICS.

AZERBAIJAN, a republic of Transcaucasia, the official name of which is the Azerbaijan Socialist Soviet Republic. It declared its independence of the Transcaucasian Federation in May 1918 and was soon after formally recognized by the Allied nations. The Bolshevik party secured control in April 1920 and broke off all relations with the allied nations because of the enmity of the latter to the doctrines and practices of Soviet Russia. In the month of September following a treaty was concluded with Russia. Azerbaijan consists mainly of the former Russian districts of Baku and Elizavetpol and claims all territory bounded on the north by Daghestan, Georgia and the northern Caucasus, south by Persia, east by the Caspian Sea and west by Armenia. It has an area of 34,000 square miles and a population somewhat in excess of 2,000,000 of whom about 1,400,000 are Moslems. Cotton, cereals, silk, viticulture and cattle-breeding are the chief industries together with the great oil industry centering about Baku. Baku, the capital and the centre of the oil industry has a population of 250,000. The chairman of the Soviet government is Mr. Narimanoff. There were armed uprisings against the Soviet regime during 1922. Representatives of the former republican government attended the Genoa Economic Conference and there made formal protest against Soviet rule. They especially took umbrage at the reported negotiations of the Soviet with oil interests regarding concessions in the Baku region. The Azerbaijan note was published 30 April and declared that the Soviets were in that country by force of arms and had no right to dispose of its natural resources; that all concessions would be annulled by the legal government. In May it was announced that Abilov, the Azerbaijan Soviet representative at Angora, had been withdrawn and his functions taken over by the Soviet minister. This was regarded as the final chapter in the absorption of the country by the Soviets.

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BABCOCK, James W., American physician: b. Chester, S. C., 11 Aug. 1856; d. Columbia, S. C., 3 March 1922. He was graduated A.B. from Harvard University in 1882 and M.D. in 1886. In 1905 South Carolina College conferred upon him the degree of LL.D. Doctor Babcock was one of the first physicians in the South to identify pellagra, and in 1910, with Dr. Claude H. Lavinder of the United States Public Health Service, edited the first treatise on pellagra published in the English language. He was assistant physician of McLean Hospital, Somerville, Mass., 1885-91; physician and superintendent, State Hospital for Insane, Columbia, S. C., 1891-1914; president, National Association for the Study of Pellagra, 1909-12, secretary after 1912; chairman, South Carolina State Hospital Commissions, 1910-13; member, Columbia Board of Health, 1898-1901; chairman, Columbia Sewerage Commission, 1901-03; Columbia Commission on Water and Waterworks, 1903-07; professor of psychiatry, Medical College of South Carolina after 1915. He was a member also of numerous medical and other societies. He published numerous monographs on insanity, tuberculosis among the insane, pellagra, and other medical subjects.

BACON, Frank, American actor: b. Marysville, Calif., about 1868; d. Chicago, Ill., 19 Nov. 1922. His early education was received in the San José public schools, and at the age of 14 he went to work on a sheep-ranch. Three years later he became apprentice to a San José photographer and for a time had a studio of his own. At the age of 21 he went into newspaper work on the *San José Mercury*. Subsequently he bought the *Napa Reporter*, of Napa City, and also established *The Mountain View Register*. He tried politics and ran unsuccessfully for the State Assembly. Then, in his own words, he "turned respectable and became an actor," joining a stock-company in San José. Among other theatrical work he was for 17 years at the Alcazar Theatre, San Francisco. After the earthquake he came East and played for 14 years in vaudeville with his wife, formerly Jessie Weidman, whom he married in 1885. Although the name of Frank Bacon was comparatively unknown until his play 'Lightnin' broke all records, he had had a long career and had played more parts than any other actor of his day. He played more than 700 parts in 17 years in San Francisco alone and probably altogether had played 1,000 characters. In New York he played in 'The Fortune Hunter,' 'Stop Thief,' 'The Miracle Man,' and 'The Cinderella Man'; and it was in the last-named play that he made his first success in the East. Then he wrote a play called 'The House Divided,' which Winchell Smith revised and worked over for two years. This was produced in Washington in February, 1918, and was highly commended by President Wilson. The play was revised again and produced at Atlantic City. In

its final shape it appeared as 'Lightnin' in September 1918. According to Bacon, it had taken 30 years to write. The play "made a hit" and so did Frank Bacon in the character of Bill Jones. Bacon played this part 2,000 times at the least. 'Lightnin' ran in New York for three years and a day (1,291 consecutive performances). It had the same success in Chicago and two road companies were playing 'Lightnin' throughout the country at the time of his death. Mr. Bacon was a member of the Players, Friars and Green Room clubs, and was second vice-president of the Actors Equity Association. Bacon was considered "America's greatest character actor." He explained his theory of acting in an address to the American Academy of Dramatic Art last year, in which he said: "If you were to ask me what I know about acting, I would say I don't know anything. My advice to young actors would be to learn all about acting and then forget it. I believe absolutely in naturalness—believing in yourself."

BACTERIOPHAGE. See MEDICINE AND SURGERY, ADVANCEMENT OF.

BADEN, officially "Republik Baden," a constituent republic of the German Empire (Deutsches Reich), formerly a grand duchy. It has an area of 5,819 square miles and a population of 2,208,503. The chief cities are: Mannheim (229,576); Karlsruhe (135,952); Freiburg (87,946); Pforzheim (73,839); Heidelberg (69,806). Karlsruhe is the capital. Baden was proclaimed a republic 22 Nov. 1918 and a constitution was drafted by a National Assembly the year following. All privileges are abolished and there is universal suffrage. The legislature consists of one chamber—the Landtag, which at present has 86 members. The chamber nominates the president of the cabinet, whose official title is State President.

There are 1,478,934 Roman Catholics, 945,975 Protestants and 26,541 Jews. There is complete separation of church and state but religion is taught in all schools and is provided by each denomination. There are two universities—Heidelberg and Freiburg, several technical schools, 17 gymnasias, 52 real schools, 14 normal schools and some special schools. Primary education is free and compulsory. The revenue in 1919 was \$63,000,000 and the expenditure was very close to this amount. For production and commerce see GERMANY.

BAHAMAS, an island group off the southeast coast of Florida and forming an administrative unit of Great Britain's possessions in the West Indies. There are 20 of these islands inhabited and many more uninhabited islets and rocks. The area is 4,404 square miles and the population in 1921, the year of the last census, was 53,031. The capital, Nassau, is on the island of New Providence. This island had a population of 12,975 in 1921. Other islands of the group, with their populations, are: Abaco, 3,993; Grand Bahama, 1,695; Harbour Island, 917;

Fleuthera, 6,048; Exuma, 3,730; Acklin Island, 1,811; Andros, 6,976; Crooked Island, 1,481; Great Inagua, 937; Long Island, 4,659; Mayagüana, 432; San Salvador, 4,273; and Watling Island, 686.

The birth rate in the same year was 34.4 per thousand of the population and the death rate was 21.6 per thousand.

There are 49 government schools with 7,500 pupils and 29 aided schools which in 1920 received \$28,000 from the government. In the same year there were 25 schools maintained by the Church of England in which the enrollment was 1,102 pupils and three Roman Catholic schools with 400 pupils. In three private schools there were 86 pupils. Secondary education is in denominational hands, there being four schools of this type with 255 pupils.

Sponge fishing and sisal hemp are the chief industries of the colony. The turtle fishery is assuming large proportions also and fruits, pineapples and tomatoes are exported.

The exports in 1922 were valued at \$1,387,434 and the imports at \$1,983,700. Cotton, linen and woollens, hardware, foodstuffs, furniture, tobacco, building material and oil are the principal imports. The United States, the United Kingdom, Canada and France are the chief takers of the exports and also supply the great bulk of the imports.

Nassau is a busy winter port, being visited by thousands of tourists from the United States and Canada in the season. There is a branch of the Royal Bank of Canada at Nassau.

The group is administered by a Governor and Commander-in-Chief, who is assisted by an Executive Council of nine members, a Legislative Council of nine and an Assembly of 29 members who are chosen by electors with a slight property qualification.

The Governor in 1922 was Maj. Sir. H. E. Cordeaux.

BAILEY, Pearce, American neurologist: b. New York City, 12 July 1865; d. there, 11 Feb. 1922. He was graduated from Princeton University in 1886 and thereafter studied medicine at Columbia University and abroad. Soon after the United States entered the World War, Doctor Bailey, then one of the most widely known neurologists in America, was called to Washington by Surgeon-General Gorgas and placed in charge of the army neuro-psychiatric service in which position he served throughout the war with the rank of colonel. He arranged the psychiatric tests used in the draft armies to weed out the unfit and in recognition of his services was awarded the Distinguished Service Medal. After the war he devoted much of his time to the work of the New York State Commission for Mental Defectives of which he was chairman. One of his latest achievements was the establishment of the classification clinic where tests are made for the purpose of determining the efficiency of young people with the view of ascertaining their aptitude for vocational training and the advisability of their entering college. He was one of the founders of the New York Neurological Institute and from 1906-10 was professor of neurology at Columbia University. He was consulting neurologist at Saint Luke's, Roosevelt, New York, Orthopedic,

Manhattan State, and Saint John's hospitals. He was a member of the American Medical Association, ex-president of the American Neurological Association, the New York Neurological Society, the Pathological Society, and the Academy of Medicine. He wrote 'Accident and Injury, Their Relations to Disease of the Nervous System' (1898).

BAKER UNIVERSITY, a co-educational institution under the auspices of the Methodist-Episcopal Church, founded in 1858 and located at Baldwin City, Kan. In 1922-23 it had a faculty of 36 members, 54 students (478—9 months term, and 66—summer school), property valued at \$1,194,598.53 and an income of \$114,920.57. Wallace B. Fleming, D.D., is president.

BALATA, the dried juice or gum of the bullet-tree, or bully-tree, used extensively in the arts and sometimes confused with gum chicle. The exploitation of balata began in 1896, when the article was exported in small quantities, the State of Monagas, Venezuela, where the tree existed in great quantities, being the first to exploit it. From that time to the end of 1921 there were exported from Ciudad Bolivar 29,873,433 kilos of balata. From 1896 to 1912 the exportation was 19,822,084 kilos, the highest exportation for this period being 2,179,631 kilos in 1911 and the lowest 75,000 kilos in 1896. In 1921 the production was 805,645 kilos. A kilo (abbreviation of kilogram) equals 2.2046 pounds avoirdupois.

BALDWIN-WALLACE COLLEGE, a Methodist Episcopal co-educational institution, founded in 1845 and located at Berea, Ohio. In 1922-23 it had a faculty of 35 members, 377 students, property valued at \$1,143,968.88 and an income of \$105,000. Albert Boynton Storms, LL.D., is president.

BALFOUR'S NOTE. See PEACE AND ARBITRATION, INTERNATIONAL.

BALKAN STATES. See ALBANIA; BULGARIA; GREECE; JUGOSLAVIA; RUMANIA; TURKEY.

BALLINGER, Richard Achilles, American lawyer and public official: b. Boonesborough, Iowa, 9 July 1858; d. Seattle, Wash., 6 June 1922. His father was Col. Richard H. Ballinger, a distinguished soldier of the Civil War. Young Ballinger was educated at the University of Kansas and Washburn College, Topeka, and in 1884 was graduated from Williams College with the degree of A.B. The last mentioned institution conferred the honorary degree of LL.D. upon him in 1909. After completing his collegiate course, Mr. Ballinger studied law and in 1886 was admitted to the bar. He opened an office in Kankakee, Ill., and soon became city attorney of that place. Later he moved to New Decatur, Ala., and from there removed to Port Townsend, Wash., where he practiced from 1889-97 when he moved to Seattle which continued to be his home until his death. Mr. Ballinger served as United States Court Commissioner, 1890-92, and as judge of the superior court of Jefferson County, Wash., from 1894-97. He was elected mayor of Seattle in 1904 and served until 1906. In 1907, upon the recommendation of James R. Garfield, Secretary of the Interior in the Cabinet of President Roosevelt, and one of Mr. Ballinger's classmates at

Williams College, the latter was appointed Commissioner of the General Land Office in Washington. This office he held until 4 March 1909 when President Taft took him into the Cabinet as Secretary of the Interior. While holding the latter office Mr. Ballinger became the central figure in a bitter controversy over the development of the Alaskan coal fields. Louis R. Glavis, then chief of the Alaskan field division of the General Land Office, after an investigation as to their validity, recommended the cancellation of the claims of the so-called Cunningham group in the Bering River district. When his recommendation was not immediately acted upon, Mr. Glavis accused the Secretary of the Interior of being unduly friendly to the Cunningham interests. Glavis was dismissed from office and then Gifford Pinchot, at that time Chief of the Forestry Service of the United States Department of Agriculture, took up the fight. President Taft supported Mr. Ballinger and Mr. Pinchot was removed from office. Mr. Pinchot, however, refused to be silenced and, though President Taft never wavered in his loyalty to Mr. Ballinger, the latter relieved his chief of further embarrassment by resigning 6 March 1911. A Congressional investigation was made of Mr. Ballinger's administration of his office and he was completely exonerated. It is proper also to state that during Mr. Ballinger's administration and that of his successor all but a few of the 1,100 claims of the Cunningham group were cancelled. After resigning Mr. Ballinger returned to Seattle and resumed the practice of law. He published 'Ballinger on Community Property' (1895), and 'Ballinger's Annotated Codes and Statutes of Washington' (1897).

BALLOONS. See AERONAUTICS.

BALTIC PROVINCES, the name given to three provinces of the former Russian Empire which bordered on the Baltic Sea. These provinces were Courland, Esthonia and Livonia and as a result of the Great War have become the autonomous states of Esthonia, Latvia and Lithuania (qq.v.).

BALUCHISTAN, a country in the western corner of the Empire of India, bounded on the north by Afghanistan, south by the Arabian Sea, east by Sindh, the Punjab and the Frontier Province and west by Persia. Its area is 134,638 square miles and its population 834,703 at the last census. The country is divided into British Baluchistan proper, area 9,096 square miles; British agency territories, area 45,132 square miles; and the native states or Khans of Kalat and Las Bela, area of Kalat, 73,278 square miles; of Las Bela, 7,132 square miles. The religion is Moslem and Hindu, the former predominating. The country exports dates, dried fish, and matting and imports fruits, wool, horses, etc. There are railways and postal services in the territories administered and controlled by the British.

The chief of Kanat in 1922 was Sir Mir Mahmud Khan. The chief of Las Bela in 1922 was Mir Ghulam Muhammad Khan. See article on INDIA.

BANGS, John Kendrick, American author: b. Yonkers, N. Y., 27 May 1862; d. Atlantic City, N. J., 21 Jan. 1922. He was graduated

from Columbia University with the degree of Ph.B. in 1883 and thereafter studied law for one year at the end of which time he accepted a position as associate editor of *Life* which he held until 1888. From that year until 1900 he was connected with *Harper's Magazine* and *Harper's Weekly* as editor of literary notes, etc. He joined the staff of the *Metropolitan Magazine* in December 1902 and remained with that publication until June 1903. The following year he became associated with *Puck* and maintained this connection until 1905. Notwithstanding his literary activities, Mr. Bangs found time to take an interest in politics and civic improvement. In 1894 he was the Democratic candidate for mayor of Yonkers but was defeated. In 1897 he was chosen vice-president of the Yonkers Board of Education and he also served as president of Halsted School, Yonkers, from 1896 to 1904. Back in 1891 he was a primary candidate to succeed Louis B. Goodall as a member of Congress from the Portland, Maine, district. Mr. Bangs was ranked as one of the leading humorists of his time. He published: 'Roger Camerden' (1886); 'Katharine,' 'The Lorgnette' (1887); 'Mephistopheles,' 'New Waggings of Old Tales' (1888); 'Tiddledywinks Tales,' 'The Tiddledywinks Poetry Book' (1890); 'In Camp with a Tin Soldier' (1891); 'Half Hours with Jimmieboy' (1892); 'Coffee and Repartee' (1893, 1899); 'The Water Ghost' (1893); 'Three Weeks in Politics' (1894); 'The Idiot' (1895, 1899); 'Mr. Bonaparte of Corsica,' 'A House Boat on the Styx' (1895); 'The Bicyclers and 'Other Farces,' 'A Rebellious Heroine' (1896); 'The Pursuit of the House Boat,' 'Paste Jewels,' 'A Prophecy and a Plea,' 'The Mantel Piece Minstrels' (1897); 'Ghosts I Have Met,' 'Peeps at People,' 'The Dreamers' (1898); 'The Enchanted Type Writer,' 'Cobwebs from a Library Corner' (1899); 'The Booming of Acre Hill' (1900); 'Toppleton's Client' (1891); 'The Idiot at Home' (1900); 'Mr. Munchausen' (1901); 'Olympian Nights,' 'Uncle Sam, Trustee,' 'Bikey, the Skicycle,' 'Over the Plum Pudding' (1902); 'Emblem-land' (1906); 'Mollie and the Unwise Man' (1902); 'Proposal Under Difficulties' (farce), 'Worsted Man' (musical play), 'Mrs. Raffles' (1905); 'R. Holmes & Co.' (1906); 'Alice in Municipaland,' 'The Inventions of the Idiot' (1907); 'Potted Fiction,' 'Andiron Tales,' 'The Genial Idiot' (1908); 'Autobiography of Methuselah,' 'The Real Thing' (1909); 'Mollie and the Unwise Man Abroad,' 'Songs of Cheer' (1910); 'Jack and the Check-Book' (1911); 'Echoes of Cheer,' 'Little Book of Christmas' (1912); 'Line o' Cheer for Each Day o' the Year' (1913); 'The Foothills of Parnassus' (1914); 'A Quest for Song' (1915); 'From Pillar to Post' (1916); 'Half-Hours with the Idiot' (1917); 'The Cheery Way' (1919). He also wrote 'Lady Teazle,' a musical comedy version of 'The School for Scandal,' and 'Tomorrowland,' a musical fantasy. In addition, he was a frequent contributor to magazines and syndicates. In 1918 Mr. Bangs went to France for the Young Men's Christian Association and the American Committee for Devastated France. On this trip he lectured to thousands of soldiers belonging to the American Expedi-

tionary Forces. One of his lectures was interrupted by an air raid.

BANKERS ASSOCIATION, American.

The American Bankers Association definitely set for itself the task during the year 1923 of bringing about better economic acquaintanceship between the banker and the general public. It strives to develop a better understanding of the fundamental principles on which the work of the banker is based in serving the personal and business interests of every man, woman and child in the nation, either directly or indirectly. The association in its annual convention in New York in October 1922 definitely formulated this as its policy in the following paragraph in its resolutions: "We pledge our support to the incoming President of the American Bankers Association in the campaign to teach sound thinking along economic lines. We regard such education as necessary for the safety of our great democracy. We believe that the universities, colleges and other educational institutions of this country should co-operate to further this work. We recognize the splendid educational accomplishments of the American Institute of Banking, and we recommend its future possibilities to the active and intelligent interest of the members of this Association."

Other phases of the work during the year will be an extension of the activities conducted during 1922. The organization is constructed with a number of specialized units devised for giving intensified study and taking formal action on many of the outstanding national problems of the day.

In the banking field itself the National Bank Division, the Savings Bank Division, the State Bank Division and the Trust Company Division function in giving detailed treatment to matters involving the various classes of banking institutions indicated in the names of these major subdivisions of the Association. The Clearing House Section handles the interests of banking as a whole in perfecting the machinery for the transference of funds and other inter-banking operations. The American Institute of Banking Section serves the interests of banking in developing among the younger bank employees better qualified personnel for conducting bank operations more efficiently and rendering better economic banking service to the nation. The State Secretaries Section promotes the common interests of the many State Bankers' associations. The State and Federal legislative committees and councils, and the Committee on Taxation cover developments in those fields affecting banking, while the Protective Department renders effective protection to banks against the operations of criminals.

Outside the specific banking field, questions of general public moment are handled by the permanent commissions and committees of the association. Reinforced by the resolutions referred to above, the Committee on Public Education is continuing its campaign of lectures by bankers on banking in the public schools, aimed to add to the general education of the youth of the land a better understanding of just what part banking plays in the nation's business life. The agricultural Commission gives attention to the financial needs of the farmer and strives to bring about a growth of mutual understand-

ing between agriculture and finance. The foreign situation and America's world economic position engage the attention of the Commerce and Marine Commission, while the subject of the internal economic policies of the nation, such as sound currency, Federal Reserve Banking, labor and many other topics are in the hands of the Economic Policy Commission.

As stated in the association's manual describing its activities: "The American Bankers Association is conducted on the broad principle that what is best for the nation is best for banking. The welfare of the two is indivisible. The Association seeks to give practical effect to its recognition of this principle by co-operation with banks and banking in the United States in their endeavor to render the highest type of public service. It goes far beyond merely offering to banks advantages of membership that are desirable from the view point of their individual gain, many and varied as these benefits are. It enables them also to discharge the broader functions and duties of their corporate citizenship both in respect to their local communities and in respect to the nation, more adequately than they could perform them if standing alone. A very large measure of the element of public responsibility is inherent in banking. More than any other business activity its welfare is based squarely on the welfare of the public. Its earnings are the reward not merely of handling money. They are the reward above all of promoting the prosperity of others. Because of these considerations, and because of the many ways in which the American Bankers Association facilitates the work of banks, both as public-spirited units in the nation's financial system and as private institutions conducted for profit, membership in the Association is both an opportunity and a duty."

Among major items of general interest covered in the resolutions of the 1922 convention was a declaration calling for the elimination of unnecessary government expenditure with a view to reducing the burden of taxation. Another directed attention to the seriousness of the foreign situation and stated the belief that the time had come for the government to formulate the principles upon which it will be able to co-operate with other nations to bring about the rehabilitation of European countries and peace to the world; it was recommended that further powers be granted to the Debt Funding Commission to enable it to negotiate more effectively with foreign nations indebted to the United States.

In regard to strikes, the resolutions expressed the hope that careful investigations of industrial relations as a basis for permanent adjustments would be made; the belief was declared that organized strikes in industries whose continued operation is essential to the well-being of the whole people should be regarded as action against the welfare of the state. Another resolution urged the support of measures tending to improve our transportation systems, both on land and sea, under individual initiative, particularly recommending the modification of the shipping laws insofar as they make it possible for ship-owners to compete on an even basis with ship-owners of other countries. In regard to agri-

cultural credits, assurance was given in the resolutions that the bankers would continue to render their best aid in the solution of the manifold problems presented, and approval was expressed of various endeavors being made by the farmers to increase their facilities for the orderly marketing of their products.

Other resolutions disapproved attacks made upon the Federal Reserve System and members of the Federal Reserve Board; and regret was expressed in regard to the agitation that has arisen for unsound money. In this latter connection a subcommittee of the Economic Policy Commission is engaged in a particular study of ways to defend the soundness of the nation's currency.

The chief officials for the year 1922-23 are as follows. President, J. H. Puelicher, president, Marshall and Ilsley Bank, Milwaukee, Wis.; First Vice-President, Walter W. Head, president, Omaha National Bank, Omaha, Nebr.; Second Vice-President, William E. Knox, president, Bowery Savings Bank, New York, N. Y.; Ex-

man of the Public Relations Commission, Francis H. Sisson, vice-president, Guaranty Trust Company, New York, N. Y.; Chairman of the Agricultural Commission, Burton M. Smith, president, Bank of North Lake, North Lake, Wis.; Chairman of the Committee on Public Education, R. S. Hecht, president, Hibernia Bank and Trust Company, New Orleans, La.

JOHN H. PUELICHER,

President, American Bankers Association.

BANKING. The banking power of the United States on 30 June 1922, measured by the capital, surplus and profits, deposits and circulation of all reporting banks, including national banks and Federal Reserve banks, and estimated figures for non-reporting private banks, aggregated \$50,175,300,000, which was \$1,955,400,000 greater than the total banking power on 30 June 1921. The number of banks and the proportion of the aggregate banking power contributed by each class of institutions is shown in the following statement as of 30 June 1922:

Money columns in millions.

	Number of banks	Capital paid in	Surplus and profits	Deposits*	National bank circulation Federal reserve notes	Total June, 1922
National banks.....	8,249	\$1,307.2	\$1,541.2	\$13,818.5	\$725.7	\$17,392.6
Reporting State banks, savings banks, trust companies and private banks.....	22,140	1,636.7	2,090.0	24,057.2	.....	27,783.9
Non-reporting private banks.....	445	6.8	11.6	96.3	.....	114.7
Total.....	30,834	\$2,950.7	\$3,642.8	\$37,972.0	\$725.7	\$45,291.2
Federal reserve banks.....	12	105.1	217.7	2,369.6	2,191.7	4,884.1
Grand total.....	30,846	\$3,055.8	\$3,860.5	\$40,341.6	\$2,917.4	\$50,175.3

* Includes dividends unpaid, postal savings and United States deposits, certified checks and cashiers' checks outstanding, but not amounts due to other banks, except deposits of Federal Reserve banks, which are reported gross.

ecutive Manager, F. N. Shepherd, New York, N. Y.; Treasurer, F. A. Irish, vice-president, First National Bank, Fargo, N. D.; General Counsel, Thomas B. Paton, New York, N. Y.; Secretary and Assistant Treasurer, William G. Fitzwilson, New York, N. Y.; President of the Trust Company Division, Theodore G. Smith, vice-president, Central Union Trust Company, New York, N. Y.; President of the Savings Bank Division, Samuel H. Beach, president, Rome Savings Bank, Rome, N. Y.; President of the National Bank Division, Waldo Newcomer, president, National Exchange Bank, Baltimore, Md.; President of the State Bank Division, H. A. McCauley, president, Sapulpa State Bank, Sapulpa, Okla.; President of the Clearing House Section, James Ringold, vice-president, United States National Bank, Denver, Colo.; President of the State Secretaries Section, W. B. Hughes, secretary, Nebraska Bankers Association, Omaha, Nebr.; President of the American Institute of Banking, Carter E. Talman, American National Bank, Richmond, Va.; Chairman of the Commerce and Marine Commission, Fred I. Kent, vice-president, Bankers Trust Company, New York, N. Y.; Chairman of the Economic Policy Commission, M. A. T aylor, president, First Trust and Savings Bank, Chicago, Ill.; Chair-

On 1 July 1922, the amount in circulation per capita was \$39.86 and the stock of money \$8,177,000,000. The returns from 8,225 reporting national banks, 29 Dec. 1922, indicated greater activity in commercial pursuits in so far as the influence of the national banking system is concerned. Judging from an analysis of the returns completed by the Comptroller of the Currency, in February 1923, it may be said that our national banks occupied a more commanding position at this time than had been shown by the returns from any call for reports of conditions since 29 Dec. 1920. The aggregate resources of these banks 29 Dec. 1922, amounted to \$21,974,957,000 and showed an increase in the interim between 15 Sept. 1922, the date of the prior call, of \$1,048,858,000, and an increase in the year, or since 31 Dec. 1921, of \$2,031,215,000. While the increase in the resources of central reserve city banks (New York and Chicago), between 15 September and 29 Dec. 1922, amounted to \$432,519,000, it is gratifying to note that banks in only 12 of the 65 other reserve cities showed a reduction in resources in this period. The net increase in resources of these reserve city banks since 15 Sept. 1922, being \$267,424,000, and country national banks or banks situated elsewhere than in central reserve or reserve

cities, with but two exceptions, South Dakota and New Mexico, which show \$675,000 and \$717,000 reductions respectively, show a net increase in resources of \$348,915,000. The resources of national banks in each of the 12 Federal Reserve districts, were increased between 15 September and 29 Dec. 1922. The increase in the second Federal Reserve or New York district, was \$439,823,000; the next largest increase, \$86,411,000 was in the eighth or Saint Louis district while banks in the third or Philadelphia district showed an increase of \$78,156,000 and in the fourth or Cleveland district, the increase was \$73,381,000. Increases in the other districts ranged from \$17,324,000 to \$72,100,000. Loans and discounts of national banks 29 Dec. 1922, including rediscounts of \$262,421,000, amounted to \$11,599,668,000 and showed an increase in the year of \$94,279,000. The percentage of total deposits to loans and discounts, 29 Dec. 1922 was 66.59 compared with 76.32 on 31 Dec. 1921. National bank holdings of United States government securities, 29 Dec. 1922, amounted to \$2,656,560,000, an increase over the amount reported 31 Dec. 1921 of \$680,662,000. The holdings of other bonds, stocks and securities, etc., amounted to \$2,347,479,000, 29 Dec. 1922, compared with \$2,081,442,000 on 31 Dec. 1921. The amount due national banks, 29 Dec. 1922, including lawful reserve and items in process of collection with Federal Reserve banks of \$1,676,639,000, aggregated \$3,059,425,000. The increase over the amount reported 31 Dec. 1921, was \$473,945,000. Total cash on hand, 29 Dec. 1922, \$391,840,000 was \$50,029,000 greater than reported 31 Dec. 1921.

The capital stock of national banks, 29 Dec. 1922, amounted to \$1,317,010,000 and showed an increase of \$34,578,000 during the year, while surplus and undivided profits amounting to \$1,604,469,000 showed an increase since the date of prior call of \$2,225,000, and an increase since 31 Dec. 1921, of \$106,281,000. The liability of national banks on account of circulating notes outstanding, 29 Dec. 1922, was \$723,819,000, a reduction since the date of previous call, of \$2,970,000 and an increase in the year of \$6,346,000. The total deposit liability of national banks, 29 Dec. 1922, was \$17,420,481,000 or \$821,719,000 greater than on 15 Sept. 1922, and an increase since 31 Dec. 1921, of \$2,345,379,000. Of the total deposits, balances due to other banks and bankers were \$3,261,574,000, or \$730,832,000 more than on 31 Dec. 1921; demand deposits, including United States deposits to the amount of \$304,176,000, amounted to \$9,840,171,000, an increase over the amount 31 Dec. 1921 of \$1,045,139,000, while time deposits, including postal savings deposits, of \$4,318,836,000 showed an increase of \$569,408,000 from 31 Dec. 1921. The increase in individual deposits from 31 Dec. 1921, was \$1,498,460,000. Obligations of national banks on account of borrowed money represented by bills payable and rediscounts, totaled \$573,202,000, 29 Dec. 1922, of which amount \$310,781,000 was on account of bills payable, and the balance on account of rediscounted paper. Comparison with the figures for 31 Dec. 1921 showed a reduction during the year of \$446,727,000, and it is evident from the returns that national banks are being conservatively managed

and are not resorting to unnecessary borrowings. The fact that Federal Reserve banks are utilized to some extent as reservoirs for excess cash holdings of national banks, is indicated from the returns for 29 Dec. 1922, which show that the amount of lawful reserve required to be held with Federal Reserve banks against deposits, in accordance with section 19 of the Federal Reserve Act, was \$1,161,292,000 and the amount actually held was \$1,222,464,000 or \$61,172,000 in excess of the amount required.

National banks in each of the 12 Federal Reserve districts reported reserve with Federal Reserve banks in excess of the legal requirements. The largest amount of excess, \$12,633,000 was reported by banks in the second Federal Reserve district; banks in the seventh district reported excess reserve of \$8,563,000 and banks in the third and 12th districts reported excess reserves of \$7,949,000 and \$6,096,000 respectively. In none of the other Federal Reserve districts was the excess reserve of banks below \$2,000,000. Thirty-one national banks, with aggregate capital of \$2,015,000, were placed in charge of receivers during the year ended 31 Oct. 1922. Of these eight were closed on account of inability to realize on loans; two owing to defalcation of officers; one, fraudulent management and injudicious banking; seven because of deficient reserve and inability to realize on loans; seven, injudicious banking; two inability to meet demands; three by reason of "runs"; and one on account of injudicious banking and depreciation of securities. Applications for charters for 272 national banking associations, with capital aggregating \$25,490,800, were made during the year ended 31 Oct. 1922, as compared with 206 applications and capital of \$25,370,000 during the year previous. Of the applications received, 210, with capital of \$23,700,800, were approved, as against 153 and capital of \$17,595,000 in 1921. On 30 Sept. 1922, there were in the United States 204 clearing-house associations. The aggregate clearings during the year ended 30 Sept. 1922 were \$380,492,992,000, an increase of \$5,667,611,000 over the clearings for the year ended 30 Sept. 1921.

The total resources of the 18,232 State (commercial) banks in the United States and its insular possessions at the close of business on 30 June 1922 amounted to \$13,064,406,000, as compared with \$14,199,099,000 on 30 June 1921. The capital stock of these banks was \$1,014,248,000 and showed a reduction since 1921 of \$48,497,000. Surplus was likewise reduced to the extent of \$18,699,000 and amounted to \$561,131,000. Undivided profits were reported at \$210,536,000, compared with \$211,882,000 in 1921. The deposit liability of State banks to other banks and bankers was \$387,657,000, compared with \$337,373,000 the previous year. Individual deposits declined to \$10,107,597,000 and were \$567,870,000 less than in 1921. United States deposits amounted only to \$7,734,000 and showed a reduction during the year of \$32,285,000. Notes and bills rediscounted were reported at \$111,651,000, compared with \$257,450,000 in 1921, and bills payable were reduced from \$560,839,000 to \$311,149,000. Other liabilities amounted to \$282,900,000. The reports from loan and trust companies showed total resources amounting to \$8,-

533,850,000 in 1,550 companies. The capital stock of these companies amounted to \$532,316,000. Individual deposits amounted to \$6,495,928,000. See TRUST COMPANIES.

Stock savings banks reported total resources of \$1,583,922,000 for 1,066 banks as of 30 June 1922. Paid in capital stock amounted to \$79,850,000; surplus, \$41,180,000; undivided profits, \$18,995,000; and individual deposits, \$1,401,742,000. See SAVINGS BANKS. Returns were received from 619 mutual savings banks 30 June 1922, with resources of \$6,351,648,000. The aggregate deposits of these banks, consisting principally of savings deposits, were \$5,779,795,000. See SAVINGS BANKS. Information received by the Comptroller of the Currency as of 30 June 1922 showed the condition of 673 private banks with aggregate resources of \$185,331,000. There are about 1,200 private banks in the United States but returns are incomplete due to the fact that in several States this class of bank is not under the supervision of the State banking departments. The aggregate deposits in the banks reported amounted to \$147,191,000. The resources and liabilities of 22,140 State (commercial) banks, loan and trust companies, savings and private banks, 30 June 1922, were as follows:

RESOURCES	
Loans and discounts.....	\$16,435,991,000
Overdrafts.....	65,402,000
Investments (including premiums on bonds).....	7,984,242,000
Banking house (including furniture and fixtures).....	625,740,000
Other real estate owned.....	134,074,000
Due from banks.....	1,475,753,000
Lawful reserve with Federal reserve bank or other reserve agents.....	1,189,192,000
Checks and other cash items.....	515,692,000
Exchanges for clearing house.....	163,498,000
Cash on hand.....	503,711,000
Other resources.....	626,062,000
Total resources.....	\$29,719,357,000
LIABILITIES	
Capital stock paid in.....	\$1,636,734,000
Surplus.....	1,648,603,000
Undivided profits (less expenses and taxes paid).....	441,409,000
Due to all banks.....	742,335,000
Certified checks and cashiers' checks.....	101,732,000
Individual deposits (including dividends unpaid and postal savings).....	23,929,952,000
United States deposits (exclusive of postal savings).....	25,513,000
Notes and bills discounted.....	155,440,000
Bills payable (including advances from War Finance Corporation and certificates of deposit representing money borrowed).....	407,083,000
Other liabilities.....	630,556,000
Total liabilities.....	\$29,719,357,000

The following statistics are concerned with the 9,255 building and loan associations in the United States on 30 June 1922. These associations had a total membership of 5,809,888 and total assets of \$2,890,764,621. The average amount due each member was \$497.56. It appears that school savings banks have been established in about 5,000 school buildings. The enrollment in these schools aggregated 2,206,132 and the number of participants (depositors) 1,295,007, or 60 per cent of the enrollment. Deposits in the school year 1921-22 exceeded \$5,500,000 and the balance due on 30 June 1922 was \$6,518,171, with interest credited to the amount of \$145,554. For statistics of the United States postal savings

system see POSTAL SERVICE, UNITED STATES; see also FINANCE.

BANKS, CO-OPERATIVE. See CO-OPERATIVE MOVEMENT.

BANKS, Labor. See CO-OPERATIVE MOVEMENT.

BAPTIST CHURCH. The most of the Baptists of the world are simply known by the general designation of Baptist, without more specific names. Several small denominations, however, known by more specific names, are not included in the figures given for the world, but will be mentioned later.

The Baptists of the world, according to figures given in 1922, have the following numbers of churches, ministers, and members.

	Churches	Ministers	Members
Canada.....	1,338	903	140,534
Central America.....	22	6	1,531
Mexico.....	69	63	4,546
South America.....	275	243	23,358
United States.....	60,598	42,583	7,966,837
West Indies.....	582	200	52,162
Europe.....	5,213	3,753	633,054
Asia.....	2,496	1,654	264,652
Africa.....	378	238	29,540
Australasia.....	403	319	30,608
Total in the world.....	71,374	49,962	9,146,822

Of the Baptists in the United States, The Northern Baptist Convention has 8,631 churches, 8,463 ministers, and 1,267,721 members; The Southern Baptist Convention, 27,634 churches, 15,853 ministers, and 3,445,383 members; and negro conventions, 24,333 churches, 18,267 ministers, and 3,253,783 members. The Baptists in Great Britain and Ireland constitute a large part of those in Europe, numbering 3,068 churches, 2,078 ministers, and 402,688 members.

The facts concerning educational institutions are as follows. Within the territory of the Northern Baptist Convention: 13 theological seminaries, 1,030 students; 23 universities and colleges, 26,754 students; six junior colleges, 1,392 students; three training schools, 133 students; 18 secondary schools, including academies, institutes, and seminaries, 2,772 students; one college for Indians, 234 students. Within the territory of the Southern Baptist Convention: two theological seminaries, 1,497 students; 34 universities and colleges, 16,437 students; 27 junior colleges, 6,074 students; three training schools, 410 students; 69 secondary schools, including academies, institutes, and seminaries, 10,680 students. One college affiliated with both conventions has an attendance of 307. There are 85 negro schools, in the South, of various grades, several being of college rank, with an attendance of 18,230. The Baptists in Canada have five colleges, with an attendance of 1,305, and three other schools, with an attendance of 797. There are seven Baptist colleges in membership with the Baptist Union of Great Britain and Ireland, and one other Baptist college in England.

The following distinct organizations of foreign-language churches are found in the United States, a few churches in Canada being also included: German, Swedish, Danish, French, Italian, Finnish, Magyar (Hungarian), Norwegian, Czechoslovak, Polish, Rumanian, Portu-

guese, and Russian. These groups report 934 churches, 488 ministers, and 75,942 members, these figures being included, however, in the lists already given. No definite figures can be secured for a few other foreign-language churches which are in existence in the United States, including Chinese, Japanese, Letts, and Mexicans.

The Free Baptists have been in large measure merged with the Northern Baptist Convention, and their statistics are included with those of that organization. Various other Baptist bodies in the United States, however, have not been included in the figures previously given. These bodies, as given in the United States census, are the following: General Six Principle Baptists, Seventh Day Baptists, Free Will Baptists, Colored Free Will Baptists, Free Will Baptists (Bullockites), General Baptists, Separate Baptists, Regular Baptists, United Baptists, Duck River and kindred associations of Baptists (Baptist Church of Christ), Primitive Baptists, Colored Primitive Baptists, and Two-Seed-in-the-Spirit Predestinarian Baptists. The total number of members in these organizations as given in the United States census of 1916 is 261,159. Later figures for the most part are not available and, when available, show little change.

The following are the principal sources which were used in the preparation of the foregoing sketch: 'American Baptist Year Book, 1922'; 'Annual of the Northern Baptist Convention, 1922'; 'Southern Baptist Convention, 1922'; and the 'Baptist Handbook for 1922' (published by the Baptist Union of Great Britain and Ireland).

GEORGE RICKER BERRY,

Professor of Old Testament Interpretation and Semitic Languages, Colgate University.

BARBADOS, an island colony of Great Britain, the westernmost of the Caribbean group and lying to the east of the Windward Islands. It has an area of 166 square miles and a population of 198,336. The capital is Bridgetown with a population of 16,648. There are 135 primary schools with an enrollment of 19,472, six second-grade schools with 422 pupils and two first-grade schools for boys with 208 pupils and a first-grade school for girls with 130 pupils. Codrington College is affiliated with Durham University and has less than 20 students. The government spends annually on education about \$150,000. The government grants to the several religious denominations amounted to \$52,000 in 1920, of which sum about \$47,000 went to the Church of England. The police of all ranks number 404. There are a supreme court and seven magistrates' courts.

About 75,000 acres are under cultivation, about half of this being planted to sugar-cane. In 1920, 35,000 tons of sugar and 6,712,930 gallons of molasses were exported and 360,000 gallons of rum were produced. In the same year the cotton crop was 22,000 pounds. The colony exported 90 tons of bituminous petroleum in 1920. The value of the fish catch the same year was \$87,000. The revenue from all sources averages \$3,000,000; the expenses are slightly in excess of \$2,000,000. The public debt in 1922 was \$2,538,769. The imports in 1921 were valued at \$24,342,168 and the exports at \$23,463,151. Coal, cotton, fertilizers, flour, dried

fish, meats, iron and steel are the principal imports while sugar, molasses, are the chief exports. The United Kingdom, the United States and Canada are the largest takers of the exports and also furnish most of the imports.

The colony has 28 miles of narrow gauge railway belonging to the government and 470 miles of roads.

The government of the colony is vested in a Governor, assisted by an Executive Council, an Executive Committee, a Legislative Council of nine appointed by the King and a House of Assembly of 24 members who are chosen annually by the registered voters.

The governor in 1922 was Lieut.-Col. Sir C. R. M. O'Brien. The Governor receives a salary of 2,500 pounds sterling.

BARBERRY. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

BARLEY. In a final report issued on the 12 December, the Department of Agriculture estimated the 1922 barley crop of the United States at 186,118,000 bushels valued at \$97,751,000. These figures compare with 154,946,000 bushels valued at \$64,934,000 grown in 1921 and 189,332,000 bushels valued at \$135,083,000 grown in 1920. The acreage for the three years was as follows: 1922, 7,390,000; 1921, 7,414,000; 1920, 7,600,000. California with a yield of 36,864,000 bushels led in production. North Dakota came second with 25,704,000 bushels and Minnesota third with 24,062,000 bushels. South Dakota was fourth with 21,896,000 bushels. Kansas was fifth with 19,332,000 bushels and Wisconsin was sixth with 14,220,000 bushels. The California production compares with 29,700,000 bushels in 1921 and 20,750,000 in 1920. The North Dakota figures compare with 16,988,000 bushels in 1921 and 19,530,000 bushels in 1920. Exports of barley from the United States in 1922 totaled 18,449,621 bushels valued at \$13,491,093, compared with 25,834,000 bushels valued at \$20,687,056 exported in 1921.

BARNARD COLLEGE, a non-sectarian educational institution for women, founded in 1889 and located at New York City. It is part of Columbia University. In 1922-23 it had a faculty of 101 members, 758 students, property valued at approximately \$6,900,000, and an approximate income of \$630,000. Nicholas Murray Butler, LL.D., D.Litt., Hon.D., is president.

BARRINGTON-FLEET, George Rutland, English actor: b. Penge, England, 15 Jan. 1853; d. London, 1 June 1922. He was educated privately and at the Merchant Taylors School, London. He was famous for his creation of leading parts in the Gilbert and Sullivan operas. His first appearance on the stage was at the Olympic Theatre, London, as Sir George Barclay in 'Clancarty.' Afterwards he joined the Gilbert-Sullivan-Cardé management and played in the original performances of all the Gilbert and Sullivan operas, except the 'Yeoman of the Guard.' In 1888 he took the management of the Saint James' Theatre, London, and produced 'The Dean's Daughter,' and 'Brantingham Hall,' and also appeared in George Edwardes' musical productions. His last performance was at the London Globe in 'The Gilded Pill.' Mr. Barrington wrote one play, and numerous duo-

logues and short pieces, magazine articles and songs; contributed to *Punch* and adapted Kingsley's 'Water Babies' for the stage. His 'Thirty-Five Years on the Stage' (1908), is an interesting record of an interesting man. When on the stage in the Gilbert and Sullivan operas he looked like a realization of one of John Tenniel's fantastic and delightful creations.

BASEBALL. See SPORTS.

BASKERVILLE, Charles, American chemist; b. Noxubee County, Miss., 18 June 1870; d. 28 Jan. 1922. In 1886-87 he studied at the University of Mississippi and in 1890 was graduated at the University of Virginia. He also studied at Vanderbilt University and at the University of Berlin. From 1891 to 1904 he was successively instructor, assistant professor and professor of chemistry and director of the chemical laboratory at the University of North Carolina. In 1904 he was appointed professor of chemistry at the College of the City of New York. Professor Bakerville discovered the chemical elements of carolinium and berzelium and invented processes for refining oils, etc. He made extensive investigations in the chemistry of anesthetics and in the applications of radium in medicine. He published 'School Chemistry' (1898); 'Key to School Chemistry' (1898); 'Radium and its Applications in Medicine' (1909); 'General Inorganic Chemistry' (1909); 'Laboratory Exercises,' with R. W. Curtis (1909); 'Progressive Problems in Chemistry,' with W. L. Estabrooke; 'Qualitative Analysis,' with L. J. Curtman; collaborator in 'Municipal Chemistry'; 'Anesthesia,' with J. T. Gwathmey; also scientific, educational, and technological articles in various periodicals.

BASKETBALL. See SPORTS.

BASUTOLAND, a territory with an area of 11,716 square miles, situated to the northeast of the province of the Cape of Good Hope, South Africa. It has a population of 500,000, of whom about 1,600 are Europeans. Maseru with a population of 2,319, is the capital. The territory is governed by a British Resident Commissioner who is subordinate to the High Commissioner for South Africa. The latter exercises legislative authority through proclamation. The revenue is about \$1,000,000 yearly. Wool, wheat and Kaffir corn are the chief crops grown. Manufactured goods are imported. The Resident Commissioner in 1922 was Lieut.-Col. E. C. F. Garraway.

BATAILLE, hā-ti'-ye, Henry, French dramatist; b. Nîmes, France, 4 April 1872; d. near Paris, 2 March 1922. He was brought up partly in Paris, where his father took up his residence following promotion to the Paris Court of Appeal, and partly in the South of France. His education was acquired at Versailles and at the Lycée Henry IV. Thereafter, having concluded that he had a talent for painting, he studied art under Jules Lefebvre and Doucet, entering the Ecole des Beaux Arts in 1890. In 1894, however, he made his first venture into drama with 'La Belle au Bois dormant' and then turned to poetry before settling down as a dramatist. His first great success in the dramatic field was achieved by that somewhat morbid play of hereditary malady 'La Lèpreuse,' written in 1896. It

was followed by the tragedy 'Ton Sang' (1897), 'L'Enchantement,' in which two sisters dispute for the loss of the husband of one of them (1900), 'Le Masque' (1902), and 'Resurrection,' adapted from Tolstoy in the autumn of the same year. In 1904 'Maman Colibri,' one of his best-known plays, was produced, to be revived in 1921. He produced 'La Marche Nuptiale' (1905), 'Poliche' (1906), 'La Femme Nuc' (1908), and 'Le Scandale' (1909). The appearance of the latter was hailed at the time as marking Bataille's definite "arrival" among the little group of great playwrights, and it was classed as one of the most interesting plays that had been produced in Paris for a number of years. It was followed by 'La Vierge Folle' (1910), 'L'Enfant de l'Amour' (1911), 'Les Flambeaux' (1912), 'La Phalène' (1913), 'L'Homme à la Rose,' a comedy, was first played in 1921, and at the time of his death two of his new plays—'La Possession' and 'La Chair Humaine'—were enjoying popular runs in Paris despite the general opinion that neither was representative of Bataille at his best. His volume of poetry, 'Le Beau Voyage,' published early in his career, attracted very favorable attention.

BATES COLLEGE, a non-sectarian educational institution, chartered in 1864 and located at Lewiston, Maine. In 1922-23 it had a faculty of 37 members, 587 students, total assets valued at \$1,927,575.60 and an income of \$210,466.15. Clifton Daggett Gray, Ph.D., LL.D., is president.

BAUXITE. The domestic production of bauxite in 1922 was at least twice as large as in 1921. The estimated output was 300,000 long tons, according to James M. Hill, of the United States Geological Survey. This quantity is about half of that normally consumed. The increase reflects a larger demand by all the consuming industries, particularly the abrasives industry. The operations in the Arkansas and the eastern fields were larger, though in Arkansas car shortage in the fall limited to some extent the production. During the first six months of 1922 the imports of bauxite averaged about 1,500 long tons a month, but after June they exceeded 3,000 tons a month. The prices of domestic dried bauxite ranged from \$6 to \$10 a ton, but were lower in the last half of the year. The prices of pulverized and dried bauxite ranged from \$12 to \$15 a ton, and of calcined from \$20 to \$25 a ton. The effect of a shortage of coal is reflected in an increase in the price of calcined bauxite during the later part of 1922. Under the new tariff the duty on bauxite is \$1 a ton, whereas under the old tariff it was on the free list.

BAVARIA, officially Freistaat Bayern, formerly a kingdom and since 22 Nov. 1918 a constituent Republic of the German Empire (Deutsches Reich) as Germany still is officially called. It has an area of 30,562 square miles and a population of 7,140,340. It is divided into the following districts for administrative purposes: Upper and Lower Bavaria, the Palatinate, the Upper Palatinate, Upper and Middle Franconia, Lower Franconia, Suabia and Coburg. There are 262 towns and 7,702 rural communes. The

principal cities are Munich (630,711); Nuremberg (352,675); Augsburg (154,555); Ludwigshafen (90,721); Wurzburg (86,571); Furth (68,162); Kaiserslautern (55,707); Regensburg (52,510); Bamberg (49,179). Roman Catholics numbered 4,862,233; Protestants, 1,912,262; and Jews, 55,065; Old Catholics, 5,816; Mennonites, 3,017; Greek Catholics, 1,611; Methodists, 1,833; Free Christians, 5,841 and 1,368 non-Christians other than Jews. Education is compulsory from six to 16. There were in 1922 6,483 elementary public schools with 22,000 teachers and 1,091,345 pupils in attendance; two agricultural schools with 323 students and three universities—Munich and Wurzburg (Catholic) and Erlangen (Protestant). There is a high court of appeal with 22 judges. Under this there are three classes of courts. The total number of judges is about 1,400. The budget for 1922 contemplated a revenue of 2,396,345,000 marks and an expenditure of 2,745,473,000 marks. The debt of the republic in 1922 was 2,736,207,473 marks of which 332,690,385 was the share of Bavaria, the remainder being the share of the central German government. Agriculture is in a flourishing state, about one-half of the total area being under cultivation and one-third in forest land. The crop acreage and production in 1920 were as follows:

CROP	Acres	Yield
Wheat.....	704,982	383,118 met. tons
Rye.....	1,185,950	548,276 " "
Oats.....	1,113,325	574,078 " "
Potatoes.....	806,450	3,173,858 " "
Hops.....	25,082	4,902 " "
Vines.....	50,042	18,252,662 gallons

The latest live stock census shows 3,667,244 cattle, 1,740,703 swine, 741,483 sheep, 365,026 horses and 431,691 goats. About two and one-half million tons of coal are produced annually and 600,000 tons of iron ore are mined. The brewing of beer is an important industry, the output in 1922 being 167,000,000 gallons. For extended statistics and other information consult 'Statistisches Jahrbuch fur Bayern' and 'Hof- und Staats-Handbuch fur Bayern' (Munich annually).

BAYARD, Thomas F., American public official: b. Wilmington, Del., 4 June 1868. His father, the late Thomas F. Bayard, was Secretary of State in President Cleveland's Cabinet and also served as Ambassador to the Court of Saint James. Young Thomas F. Bayard was a student at Saint Paul's School, Concord, N. H., from 1880-86, entered Yale University in the fall of the latter year and was graduated with the degree of A.B. in 1890. He thereafter studied law at the Yale Law School (1890-91), then studied law in his father's office in Wilmington and was admitted to the Delaware bar in 1893. In 1897 he moved to New York City and was appointed assistant to Hon. Francis W. Scott, Corporation Counsel of New York City. After a year here he opened an office for himself and practiced in New York until 1901 when he returned to Wilmington where he has lived

ever since. In 1916 Mr. Bayard was Democratic candidate for Congress, but was defeated by the late L. Irving Handy. In 1905 he was candidate for State Senator, but was defeated. He was chairman of the Democratic State Committee of Delaware, 1906-16. In 1917-19 he served as City Solicitor of Wilmington, having been appointed by Mayor John W. Lawson; this was the only public position that Bayard ever held. In 1921 he was candidate for mayor but was defeated. On 7 November he was elected to the United States Senate both to fill the vacancy for the unexpired term ending 4 March 1923, and for the full six year term beginning on that date. His father, his grandfather, James Asheton Bayard; his great-uncle, Richard Henry Bayard; his great-grandfather, James Asheton Bayard and his great great-grandfather Richard Bassett were all United States Senators from Delaware. He is therefore the sixth member of his family to sit in the Senate. On 3 Oct. 1908, he married Miss Elizabeth Bradford du Pont, daughter of the late Dr. Alexis T. du Pont, and a cousin of Col. T. Coleman du Pont, whom he defeated for the Senate.

BAYLOR FEMALE COLLEGE, an educational institution, under direction of Baptist Church, founded in 1845 and located at Belton, Texas. In 1922-23 it had a faculty of 65 members, 1,535 students, property valued at \$1,300,000 and an income of \$522,376.50. John Crumpton Hardy, LL.D., is president.

BAYLOR UNIVERSITY, a Baptist co-educational institution, founded in 1845 and located at Waco, Texas. In 1922-23 it had a faculty of 70 members, 1,200 students, property valued at \$1,000,000 and an income of about \$350,000. Samuel Palmer Brooks, LL.D., is president.

BEACH, S. A., d. 2 Nov. 1922. See HORTICULTURE.

BEAN BEETLE, Mexican. See ENTOMOLOGY, UNITED STATES BUREAU OF.

BEANS. The 1922 bean crop of the United States, according to the Department of Agriculture, totaled 11,893,000 bushels valued at \$44,429,000. These figures compare with 9,150,000 bushels valued at \$24,399,000 grown in 1921 and 9,185,000 bushels valued at \$27,134,000 grown in 1920. The 1922 acreage was 1,043,000, compared with 777,000 in 1921 and 847,000 in 1920. Michigan led in production in 1922 with 4,809,000 bushels. California was second with 4,778,000 bushels. New York was third with 1,302,000 bushels. In 1921 California produced 3,618,000 bushels, Michigan 2,972,000 bushels and New York 1,072,000 bushels. In 1920 California produced 3,000,000 bushels, Michigan 3,718,000 bushels and New York 756,000 bushels.

BEATTY, Troy, American Episcopal clergyman: b. Tuscaloosa, Ala., 12 Nov. 1866; d. Nashville, Tenn., 24 April 1922. He was educated at University of the South, Sewanee, Tenn., where he also studied theology. In 1891 he became deacon and in 1892 priest of the Protestant Episcopal Church. He was rector of Trinity Church, Mason, Tenn., in 1892; Saint Andrew's, Darien, Ga., in 1893-97; Emmanuel, Memphis, Tenn., in 1916-19. In the

latter year he was consecrated co-adjutor bishop of Tennessee and at the time of his death was acting head of the Church in the South. He was deputy to the Pan-Anglican Convention, London, England, in 1898. After 1901 he served as deputy to the General Convention of the Protestant Episcopal Church. For many years he was a member of the standing committee of the diocese of Atlanta and for three years of that of Tennessee. The University of Georgia gave him the degree of D.D. in 1917 and the University of the South the same in 1921. Doctor Beatty was a well-known Mason. He was grand prelate of the grand encampment Knights Templar of the United States; past prelate of Ancient Arabic Order Nobles Mystic Shrine and past grand chancellor Knights of Pythias of Georgia.

BEAVER COLLEGE, a Methodist educational institution for women, founded in 1853 and located at Beaver, Pa. In 1922-23 it had a faculty of 23 members, 267 students, property valued at \$350,000, and an income of \$47,000. James M. Thoburn, D.D., is president.

BECHUANALAND PROTECTORATE, a British territory of South Africa lying between the Zambesi and Molopo rivers and extending from Southwest Africa on the west to the Transvaal and Matabeleland on the east. It has an area of 275,000 square miles and a population in 1921 of 152,983, of whom about 2,000 were Europeans. The native tribes are governed by their chiefs, who rule under the protection of the king, the latter being represented by a Resident Commissioner responsible to the High Commissioner of South Africa. Mafeking is the administration headquarters. Agriculture and stock raising are the chief occupations of the inhabitants. In 1921, 32,450 head of cattle were exported. Gold and silver to the value of \$100,000 were produced in 1921. There are schools for natives and for Europeans, the government expending \$11,213 for education in 1921. The revenue in 1921 was \$491,261, with an expenditure somewhat in excess of this amount. There is no public debt. The figures regarding imports and exports are not available because of the fact that the protectorate is within the Customs Union of South Africa. The Rhodesia Railway traverses the protectorate. There are no banks. British currency is used. The Resident Commissioner in 1922 was J. C. McGregor.

BEEF CATTLE. See AGRICULTURE IN THE UNITED STATES.

BEE-KEEPING. See ENTOMOLOGY, UNITED STATES BUREAU OF.

BELGIAN CONGO, a central African colony of Belgium having an estimated area of 909,654 square miles and a population of 11,000,000. Of the population about 8,200 are European including 5,000 Belgians, 1,000 English, 300 Americans and 700 Portuguese. Many native dialects are spoken but Fiole is the commercial tongue used in the Lower Congo while Bangala holds a similar place in Upper Congo. The Minister for the Colonies governs the colony and is ex-officio president of the Colonial Council of 15 members, a majority of whom are appointed by the King. In the colony the representative of the King is the Governor-General to whom are

several subordinate or district governors. The budget of the colony is presented to the Belgian chambers and is voted on in the usual manner. In 1922 the revenue of the colony was \$13,617,428 and the expenditure was \$16,231,187. There is a force of native troops officered by Belgians numbering about 15,000 and is recruited by voluntary enlistment for a term of seven years. The colony produces rubber, palm nuts and palm oil, copal, cocoa, coffee, ivory, rice, cotton and tobacco. The live stock industry is hampered by the ravages of the tsetse fly but in the highlands of Katanga where this pest is absent it flourishes. Gold and copper are the chief minerals worked but others are known to exist such as diamonds, coal, iron. The output of copper was 21,000 tons in 1921 and diamonds sent out the same year amounted to 243,901 carats. The special imports in 1920 were valued at \$29,655,000; the special exports at \$39,546,099. Machinery, textiles and foodstuffs are the principal items of import. The chief centre in the colony until 1921 was the port town of Boma but in that year Kinshasa was officially made the capital of the colony. The Colonial Administration maintains 17 steamers on the Lower Congo and 46 on the Upper Congo. In addition to the latter there are over 50 steamers operated by private interests on the upper reaches of the river. The Congo is navigable from its mouth for a distance of 93 miles to Matadi. From this point for 200 miles there stretches a succession of rapids which render navigation impossible as far as Leopoldville from which town it is again navigable for 1,100 miles to Stanley Falls. Above this place it is navigable for vessels of lighter draught for a distance of 585 miles. Several of the tributaries also are navigable. The colony has 2,663 miles of railways and over 5,000 miles of roads. There is a pipe line 246 miles long for the transport of petroleum from Matadi to Leopoldville. An aerial courier service was established in 1921 between Kinshasa and Stanleyville. In 1922 the colony had 2,085 miles of telegraph line. There are 15 wireless telegraph stations. The Governor-General in 1922 was M. Maurice Lippens.

BELGIUM, officially "Royaume de Belgique" (Kingdom of Belgium), a country of northwestern Europe lying to the north of France and to the southwest of Holland and having an area of 11,744 square miles and a population of 7,684,272. Brussels is the capital and the reigning sovereign is Albert, who succeeded to the throne on the death of his uncle, Leopold II, on 17 Dec. 1909. According to the recent amendments to the Constitution all members of both houses of the legislature are elected by universal suffrage. Senators are elected for a term of four years and must be at least 40 years of age. Members of the lower house or Chamber are also elected for four-year terms and must have attained the age of 25 years. Of the total population about 2,900,000 speak French only, 3,250,000 speak Flemish only, 900,000 speak both those languages, 35,000 speak German only and about 55,000 speak all three languages. Brussels and its suburbs have a population of 684,870; Antwerp, 333,882, and Ghent and Liege, 165,000 each. The great majority of the people are of the Roman Catholic faith,

this church having about 6,000 clergy of all grades; the Protestant Evangelical Church having but 21, and the Jews 15 rabbis and ministers. There are no statistics regarding the religious adherence of the people since the profession of faith query has been omitted from the census forms.

Education.—In the whole kingdom there are 7,959 primary schools with an enrollment of 960,819 pupils, 3,375 infant schools with 205,418 pupils and 4,200 continuation schools for adults with 174,000 pupils. There are 75 normal schools which supply the teaching staffs of these elementary schools. There are also many private elementary schools, all of which are subject to state supervision. There must be at least one primary school in every commune and the cost of the primary education is borne by the communes, but in certain cases subsidies are granted by the central government and by the provinces. For secondary education there are 145 schools with 39,548 pupils. In addition there are 23 royal Athenaeums with 8,000 pupils, one provincial college, four municipal colleges and eight private colleges, with an aggregate registration of 3,154 pupils. There are six commercial high schools, one polytechnic, one agricultural institute, a state veterinary school, schools of design and royal conservatories. There are four universities—Ghent, Liege, Louvain and Brussels. The two first-named are state institutions. The aggregate attendance at these institutions is 8,089 according to the very latest reports. The various technical schools affiliated to the universities have a registration of about 3,000 students in the aggregate.

Agriculture.—In normal years about 2,000,000 hectares are under cultivation, but the latest available data showed only 1,340,415 hectares under cultivation. Wheat, barley, oats, rye, potatoes and sugar beets are the chief crops. Tobacco is also grown, but the acreage planted to this crop varies very greatly. In 1920 tobacco was planted to only 7,000 acres and the yield was 15,000,000 pounds.

Other Industries.—Coal is mined to the extent of about 20,000,000 metric tons annually, the production for the year 1920 being 22,413,530 tons, 2,922,000 tons of briquettes and an equal amount of coke. In that year there were 167,924 workers engaged in the coal industry. Pig iron was produced the same year to the amount of 1,128,518 tons, valued at 565,000,000 francs. Steel production the same year was 1,233,952 tons, and 1,071,900 tons of wrought steel. Crude zinc and lead were produced also in large quantities. There are 60 sugar factories in operation producing sugar from beets to the amount of 200,000 tons of raw sugar annually. This is slightly below the normal number of factories and their normal production, but the industry was virtually eclipsed during the war and has not yet fully recovered.

Commerce.—In 1920 the Belgian imports aggregated 17,511,863 metric tons, valued at 10,000,000,000 francs, and the exports 17,160,355 metric tons, valued at 7,150,000,000 francs. Wool, cotton, wheat, wine, machinery, iron and steel, asphalt and chemicals formed the bulk of these imports, while coal, glassware, manufactured iron and steel, cotton, textiles, hides and sugar

constituted the greater portion of the exports. The imports came from France, the United States and the United Kingdom to the extent of over two billions each, the balance coming from Germany, Argentina and Holland. In 1921 Germany reached third place in the list of countries furnishing the imports of Belgium. Belgian exported goods valued at 1,613,000,000 francs to France in 1920, to the United Kingdom went goods valued at 1,236,000,000 francs, and to Germany goods valued at 1,100,000,000 francs. Holland took goods to the value of 950,000,000 francs and Switzerland, Argentina, the United States and Italy in lesser amounts. See RECENT HISTORY, below.

Banking and Finance.—The National Bank is the only bank of issue and it carries on all the usual banking functions. Its capital and reserve in 1921 amounted to 100,175,300 francs. It is the state depository. There are several joint stock, private and savings banks. The state budget for the year 1922 showed a revenue of 2,573,178,900 francs and an expenditure of 3,468,143,961 francs. The state public debt amounts to 35,000,000,000 francs, of which 919,000,000 francs are due the United States. Significant progress in Belgian Government financial organization was shown by the presentation of the 1923 budget before the beginning of the year to which it related, an event the parallel of which will be vainly sought, not only since the war, but for at least five years before it. The budget for 1923 shows estimated total expenditures of 8,337,021,149 francs and anticipated total receipts of 5,942,079,740 francs, leaving an expected deficit of 2,394,941,409 francs, compared with an estimated deficit of 1,142,150,931 francs in 1922. Total expenditures show an advance of 877,196,349 francs over the 1922 estimate.

Reconstruction.—The *Bulletin de Documentation Economique* of 23 Sept. 1922 publishes the following figures concerning the reconstruction of houses and public buildings in Belgium up to 31 March 1922:

TYPES OF BUILDINGS	Number	Expenditure
Buildings reconstructed or restored by means of advances from State.....	12,650	Francs 182,031,257.90
Buildings reconstructed or restored by the State.....	6,720	332,739,056.16
Semipermanent houses.....	3,097	9,291,000.00
Stables constructed by State subsidies.....	620	3,100,000.00
Semipermanent houses constructed by the State to serve as models.....	524	5,240,000.00
Workmen's dwellings constructed by the State.....	625	14,000,000.00
Total.....	24,236	546,401,314.06
Public buildings.....	812	77,581,016.60
Grand total.....	25,048	623,982,330.66

Army and Navy.—The active army numbered about 100,000 men at the end of the year. The navy consists of a sloop, three torpedo boats and two submarines.

Railways and Roads.—There are 4,649 miles of railways in Belgium, of which 2,759 are

the property of the state and 1,766 miles are eight railways. Electrification of all the railways is in contemplation. There are 6,177 miles of roads, the greater part of which is paved with stone.

Belgian telegraph offices during the fiscal year ended 31 March 1922 numbered 2,817, of which 979 were open to the public. The total length of telegraph wire in service was 46,230 kilometers, 9,261 kilometers of which formed the Belgian sections of international telegraph circuits.

History.—The cabinet at the beginning of the year was constituted as follows:

Prime Minister and Minister of Finance	Georges Theunis
Minister of Foreign Affairs (Catholic)	Henri Jasper
Minister of Justice (Liberal) ..	M. Masson
Economic Affairs (Catholic) ..	M. Van de Vivere
Defense (Liberal)	M. Devese
Interior (Catholic)	Viscount Berryer
Railways (Liberal)	M. Neujean
Agriculture and Public Works (Catholic)	Baron Ruzette
Industry and Labor (Catholic)	M. Moyersoen
Sciences and Arts (Liberal) ..	Prof. Hubert
Colonies (Liberal)	M. Franck

The Prime Minister thus constituted his cabinet of five Catholics and five Liberals and gave no cabinet recognition to the Socialists. The elections which preceded the formation of the cabinet showed a net gain for the Catholic party, a status quo for the Liberals and a loss for the Socialists. The Chamber of Deputies is constituted as follows: Catholics, 80; Socialists, 68; Liberals, 34; other parties, 5. The alignment in the Senate is: Catholics, 73; Socialists, 52; Liberals, 28. Mme. Paul Spaak, Socialist, is the first woman elected to the Belgian Parliament. President Harding nominated Henry P. Fletcher to succeed Mr. Brand Whitlock as Ambassador to Belgium. The latter received in person from the King the thanks of the nation for his relief work during the German occupation.

In the spring Belgium continued to discuss with England a defensive pact. It was thought best to conclude a 30-year treaty under the terms of which England would agree to come to the aid of Belgium in the event of an attack by Germany, and that the terms of this accord would be made along the lines of the projected Anglo-French defensive agreement as well as with the agreement made between France and Belgium in 1920. It was felt that these pacts would tend to relieve Belgium of unnecessary military expense and enable a larger portion of her man-power to be turned to productive industry. Belgium also concluded an economic agreement with the Grand Duchy of Luxembourg. The latter state had up to the end of the war been a member of the German Zollverein or Customs Union and after the defeat of Germany it was believed in some quarters that she would agree to a political union with either Belgium or France. The inhabitants, however, decided to remain an independent state but to renounce all connection with the Zollverein. The

new agreement is of the very greatest importance inasmuch as the products of both countries supplement each other. Belgium has little iron ore but plenty of coal, while the Grand Duchy has an abundance of iron ore and no coal. The suppression of customs tariffs on these products is likely to conduce to the economic development of both countries.

The foreign trade of Belgium fell off somewhat in both imports and exports according to the statistics given out by the United States Department of Commerce on 6 March 1922. Imports showed a decrease of 2,887,182,000 francs, while exports declined only 1,714,684,000 francs in the trade of the preceding 12 months.

The national debt of the country is 35,000,000,000 francs. The interest on this huge sum together with running government expenses five times greater than in pre-war times has rendered the financial condition of the country most difficult and even perilous. The most hopeful sign of the year was the coalition effected by the Catholic and the Liberal parties by which the Socialists were excluded from the government. This has had a very stabilizing effect on business interests generally. Unemployment was decreased throughout the year but was still sufficient to embarrass the treasury through the indemnity of from five to 10 francs a day payable to the families of the unemployed.

The economic treaty with Luxembourg went into effect 1 May 1922, after which the customs frontier between the two countries was abolished. Under this treaty the absolute sovereignty and the political independence of the contracting states are preserved. The Belgian tariff schedule now obtains on all the frontiers of the Grand Duchy other than on the frontier facing Belgium. Customs receipts are to be pooled and divided in proportion to population. Further commercial treaties will be concluded by Belgium in the name of the Customs Union and the interests of the Duchy abroad will henceforth be cared for by the consuls of Belgium. The currency of the Duchy will be retired and the Belgian monetary system extended there as soon as possible. A section of the treaty provides for the operation of the railways of the Grand Duchy. To carry out the treaty on an equitable basis three mixed commissions and a court of arbitration are provided for.

During the summer the government set about making conventions, both economic and military, with her neighbors. A military convention was concluded with France and a similar understanding was sought with Great Britain. With Holland negotiations were begun looking to a revision of the Treaty of 1839. Belgium took a prominent part at the London Conference of Prime Ministers in August where she helped reconcile the extreme views of the French and British ministers. Belgium acceded to the proposal of a temporary moratorium on German reparation payments, being more concerned about the preservation of the Entente than about the temporary financial embarrassment caused by the cessation of payments. In the autumn the Belgian government was concerned chiefly with the negotiations relative to the German reparations payment. Bel-

gium agreed to accept six-month German treasury bonds guaranteed by the Reichsbank. These guaranteed bonds were to fall due as follows: 50,000,000 gold marks on 15 Feb. 1923; similar amounts on 15 March and 13 April 1923 and 60,000,000 gold marks on 15 May and again on 15 June 1923. The Italian sovereigns visited Belgium in October and received an enthusiastic welcome from all classes of the population. Later the same month the new law for military reforms was approved by the Council of Ministers. Under its terms the duration of service in the auxiliary divisions is eight months; in infantry and artillery 10 months; in the technical corps, 12 months, and in the cavalry and mounted artillery, 13 months. On 19 October the Fifth Diplomatic Conference on international maritime rights opened at Brussels with delegates present from 22 countries. The conference set about the elaboration of the first two chapters of the International Code of rights and agreements regarding landings, maritime assistance and salvage.

BELL, Alexander Graham, American scientist and inventor of the telephone: b. Edinburgh, Scotland, 3 March 1847; d. Beinn Breagh, his summer home near Baddeck, Nova Scotia, 2 Aug. 1922. He was a son of Alexander M. Bell. For a time he was taught at home by his parents, especially by his mother, whose musical talent he inherited, and by August Benoit Bertini, a musical authority and composer. He then attended McLauren's Academy in Edinburgh for one year, after which he entered the Royal High School, from which he was graduated shortly after his 13th birthday. He next went to London, where he received instruction in elocution and the mechanism of speech from his grandfather, Alexander Bell, a recognized authority on these subjects. Returning to his home, he was further trained along the same lines by his father with a view of following the family profession. He was then employed for a year as a pupil-teacher at Weston-House Academy, Elgin, Scotland, after which he entered the University of Edinburgh, where he attended lectures upon Latin under Doctor Sellers, and upon Greek under Professor Blakie. He next returned to Elgin as resident master and teacher of elocution and music, and remained there two years, after which he was made instructor in Somersetshire College, Bath, England, where he taught for one year. His father having in the meantime moved to London, where he was made lecturer of elocution in University College, the younger Bell also moved to that city and became his father's assistant. In 1868 he successfully taught several deaf-born children to speak, and from July to December of that year, while his father was delivering a course of lectures in America, he had entire charge of the latter's personal affairs, including the giving of lessons and lectures at various schools, and the correcting of defects in the speech of some of his father's pupils. From 1868-70, he attended lectures on anatomy and physiology at University College, London, joined the college medical society and matriculated as an undergraduate at the London University. When young Bell was 22 years old he was threatened with tuberculosis, which had caused the death of his two brothers.

His father, fearing that his only remaining son might also succumb to the disease, moved with his family to Canada and located at Tutelo Heights, near Brantford, Ontario. Here, by spending the greater part of his time out of doors, young Bell regained his health. A year later, in 1871, he moved to Boston and for a time gave special instruction to teachers of deaf children in the use of his father's physiological symbols of speech, teaching in Boston, Northampton, Mass., Hartford, Conn., and other cities. In 1872 he opened in Boston a normal training school, known as the School of Vocal Physiology for teachers of the deaf and for instruction in the mechanism of speech, faults of speech, etc. In 1873 he was appointed professor of vocal physiology in Boston University, which position he held until 1877.

Among the pupils who attended his private school was Miss Mabelle Gardiner Hubbard, a daughter of Gardiner G. Hubbard of Cambridge, Mass. Miss Hubbard, when but three years old, had suffered an attack of scarlet fever, which left her totally deaf. Mr. Bell's interest in Miss Hubbard's case led to a romance which culminated in their marriage in 1877. It has been said that his desire to devise a means of enabling her to hear led to experiments in the realm of phonetics, which resulted in his great invention — the telephone. Mrs. Bell, never having recovered from the shock of her husband's death, died 3 Jan. 1923 at the home of her daughter, Mrs. David Fairchild, Chevy Chase, Md., near Washington, D. C. Another daughter, Mrs. Elsie May Grosvenor, wife of Dr. Gilbert Grosvenor, president of the National Geographic Society, also lives in Washington.

Having conceived the theory that speech could be reproduced by an electrically-charged wire, it is said that Mr. Bell spent three years, working mostly at night in a cellar in Salem, Mass., in an effort to devise an instrument which would prove the truth of his theory. His first success came while he was testing his instruments in new quarters in Boston. He had as his assistant Thomas A. Watson, who one day struck a clock spring at one end of a wire, with the result that the sound was heard by Mr. Bell in another room. The inventor labored for 40 weeks and then one day Watson, who was working in another room, was startled to hear Mr. Bell's voice say, "Mr. Watson, come here. I want you." On 17 March 1876, Mr. Bell was granted a patent for his invention, often referred to as the most useful and valuable invention known. His experiments were financed largely by his father-in-law, who became the organizer and first president of the Bell Telephone Company. The first public demonstration of the telephone was given at the Philadelphia Centennial. Mr. Bell had been promised an opportunity to exhibit his invention on a certain Sunday afternoon. When the time arrived, it was hot and the judges were tired. For a while it looked as if there would be no demonstration. Then, Dom Pedro, the Emperor of Brazil, appeared and shook Mr. Bell by the hand. He had heard some of the young inventor's lectures and wanted to know what his invention was like. For the purpose of giving the demonstration, a wire had been strung along the room in which

the instrument was installed. Dom Pedro placed the receiver to his ear and Mr. Bell at the other end of the wire spoke into the transmitter. "My God, it talks," exclaimed the Emperor. Then Lord Kelvin took the receiver and listening for a moment said, "It does speak. It is the most wonderful thing I have seen in America." The judges thereafter took turns listening and the demonstration lasted until 10 o'clock that night. From that time until the close of the exhibition, the instrument was the center of interest for scientists. Although the telephone is by far Mr. Bell's best known invention, it was by no means his only invention. Before he was 17 he devised a method of removing the husks from wheat and he and his brother made a speaking automaton. Among his more important inventions are the harmonic multiple telegraph (1874), the photophone for transmitting speech and other sounds by means of light, an induction balance, and a telephone for painless detection of bullets in the human body, for which he was awarded an honorary degree of M.D. by the University of Heidelberg at its 500th anniversary. With C. A. Bell and Sumner Taintor, he invented the graphophone in 1883. He also invented a new method of lithography, tetrahedral kites and kite structures, and was joint inventor of a number of improvements designed to promote aerial locomotion, with the Aerial Experiment Association.

Medals awarded to Doctor Bell include the following: Centennial Exposition, Philadelphia, gold medal for speaking-telephone, gold medal for visible speech (1876); Royal Cornwall Polytechnic Society, the James Watt silver medal for the telephone (1877); Massachusetts Charitable Mechanics Association, gold medal for the telephone, gold medal for visible speech (1878); Society of Arts, London, Royal Albert silver medal for his paper on the telephone (1878); République Française Exposition Universelle Internationale, Paris, gold medal for the telephone and a silver medal (1878); Society of Arts, London, Royal Albert silver medal for his paper on the photophone (1881); the Karl Koenig von Wuerttemberg gold medal; Society of Arts, London, Royal Albert gold medal for his invention of the telephone (1902); John Fritz gold medal (1907); Franklin Institute of Philadelphia, Elliott Cresson gold medal for the electrical transmission of speech (1912); David Edward Hughes gold medal and a silver medal (1913); American Institute of Electrical Engineers, Thomas Alva Edison gold medal (1914). The honorary degrees conferred upon him include: Doctor of Laws, Illinois College (1881); Harvard College (1896), Amherst College (1901), Saint Andrew's University (1902), Edinburgh University (1906), Queen's University, Canada (1908), George Washington University (1913), Dartmouth College (1914); Doctor of Philosophy, National Deaf-Mute College (now Gallaudet College) (1880), Würzburg University (1882); Doctor of Science, Oxford University (1906); Doctor of Medicine, Heidelberg, Germany (1886). To him was awarded by the government of France the Volta prize of 50,000 francs for the electrical transmission of speech (1880); he was also

decorated and created an officer of the Legion of Honor of France (1881).

Among the societies of which Doctor Bell was a member are the following: Boston Society of Natural History; American Academy of Arts and Sciences, Boston; Royal Society of Arts, London (honorary); Society of Telegraph Engineers and Electricians, London; Institute of Electrical Engineers, London; American Association for the Advancement of Science (life); Philosophical Society of Washington; American Philosophical Society, Philadelphia; National Academy of Sciences; National Educational Association (life); Société de Physique (corresponding), Paris; American Otological Society (honorary); American Institute of Electrical Engineers (ex-president); American Association to Promote the Teaching of Speech to the Deaf (founder, endower and ex-president); Antiquarian Society of Massachusetts; Anthropological Society of Washington; Washington Academy of Sciences; National Geographic Society (ex-president); Association for the Improved Instruction of Deaf-Mutes (honorary); Telephone Pioneers of America; American Anthropological Society; American Senetic Association; American Laryngological, Rhinological and Otological Society (honorary). In 1887 he founded and endowed the "Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf," Washington, D. C. In 1900 he assisted in the formation of the American Association to Promote the Teaching of Speech to the Deaf and endowed the association. As special agent of the Bureau of the Census he determined the scope of that part of the 12th census relating to the deaf of the United States living on 1 June 1900, initiated the inquiry, specified the tabulations to be made from the data secured, conducted the correspondence and prepared the text of the special report of 200 pages that is valued highly by all who are investigating any phase of deafness. He was appointed by Congress a regent of the Smithsonian Institution in 1898. In January 1904 he brought the remains of James Smithson, founder of the Smithsonian Institution, from Genoa, Italy, to New York, where they were received with national honors and conveyed to Washington.

BELLS, Manufacture of. In 1921 there were nine establishments engaged in the manufacture of bells in the United States, compared with 10 in 1919 and 12 in 1914. The bells manufactured by these concerns were valued at \$645,000 in 1921, \$951,000 in 1919 and \$970,000 in 1914. Persons engaged in the industry numbered 240 in 1921, 275 in 1919 and 504 in 1914. Salaries and wages paid amounted to \$257,000 in 1921, \$264,000 in 1919 and \$320,000 in 1914. Materials used cost \$277,000 in 1921, \$450,000 in 1919 and \$438,000 in 1914. Of the nine establishments reported in 1921, three were located in Connecticut, two each in Missouri and New York and one each in Illinois and Ohio.

BELOIT COLLEGE, a non-sectarian educational institution, founded in 1846 and located at Beloit, Wis. In 1922-23 it had a faculty of 51 members, 556 students and prop-

erty valued at \$1,250,000. Income figures for 1922-23 are not given but for 1921-22 they were \$263,498. Melvin A. Brannon, Ph.D., LL.D., is president.

BENEDICT XV, (GIACOMO DELLA CHIESA), Pope: b. Pegli, near Genoa, 21 Nov. 1854; d. Rome, 22 Jan. 1922. He was the second son of Giuseppe, Marchese della Chiesa, and Contessa degli Migliorati, a member of a celebrated family of the Abruzzi, which had given Innocent VII (1404-06) to the Holy See. After finishing his schooling in Genoa and taking his degree in jurisprudence at the University of that city, he entered, in 1876, the Collegio Capranica in Rome to study theology. He completed his studies at the Accademia dei Nobili Ecclesiastici. Later in life he returned for a short time to the Accademia to lecture in diplomatics. It was there he made the acquaintance of Rampolla, then Secretary of Propaganda, who having been ordered to Spain on a delicate mission, took della Chiesa with him as his secretary. When Rampolla, in 1887, became Secretary of State to Leo XIII he secured for della Chiesa the post of Sostituto, or permanent Under-Secretary. Della Chiesa remained the close co-operator of Rampolla till the death of Leo XIII in 1903 and continued in office under Pius X until 1907, when he left Rome to become Archbishop of Bologna. At Bologna, Archbishop della Chiesa interested himself in co-operative societies, in education, especially the education of the poor and ignorant, and endeared himself to the people by his acts of charity. Here he gave some indication of that munificent charity which was to be the particular characteristic of his Pontificate. At Bologna he was a poor man, and he used to regret that his charities left him unable to patronize the arts, though he was always ready to help as far as he could the arts and crafts guilds of his archdiocese. In May 1914 he was admitted to the Sacred College.

Pius X died 20 Aug. 1914 and on 3 September, a month after the outbreak of the Great War, Cardinal della Chiesa was elected Pope, and chose the name Benedict XV. With the exception of Pius IX, who was elected Pope at the age of 54, Benedict XV was one of the youngest pontiffs of modern times, having been elected shortly before completing his 60th year. His election to the chair of Saint Peter so soon after his elevation to the cardinalate was almost unprecedented in modern times. By the choice of his title he indicated rather clearly what his policy was going to be. It may have been out of courteous memory that he chose the name of his great predecessor in the Archbishopric of Bologna, Prospero Lambertini, afterwards Benedict XIV, but it is certain that the two were not merely curiously alike in character—aristocratic, deeply read, liberal-minded, austere and ascetic—but also alike in outlook.

By the outside world little was known of Benedict XV at the time of his election except that he was an expert diplomatist. His first public message, issued 11 Sept. 1914, took the form of an appeal to the world, in which he declared his intention of devoting himself to the duty of bringing to a speedy end "this great calamity." The message, however, contained no direct censure of the invasion of Belgium, or of

the way in which that invasion was conducted and this was a sore disappointment to the Entente Allies. But Benedict remained true to his own policy and ignored whatever criticism there was. He appealed at various times to Francis Joseph of Austria, to the Emperor of Germany, to President Wilson, always with the same absence of condemnation. In the beginning of December 1914, the Pope endeavored to persuade the belligerents to arrange a truce during the Christmas season, but without avail. A little later he wrote to Cardinal Mercier (for whom several of the cardinals had voted at the Papal election, as a protest against German action in Belgium) to express his sorrow for the sad condition of the Belgian people, but in keeping with his policy of neutrality there was no note of censure in his letter. In January he addressed a letter to the Kaiser, begging him "to end this unholy war" and arrange an exchange of prisoners unfit for further service. The Emperor's reply was sympathetic, but that was all. At Easter, Benedict XV sent a message to America, in which he counselled prayers for peace, and said that the whole world was looking to America to take the initiative steps to bring it about. In May 1915 he wrote of the employment, "both on land and on sea," of methods of offense "contrary to the dictates of humanity and international law," but he did not say by which side they were being employed. Later he affirmed that there were wrongs on both sides. "Each accusation," he was quoted as having said to a French newspaper correspondent, "is replied to by the Germans, and I cannot at present make inquiries." Without manifesting the slightest partiality, he worked unceasingly in his efforts to bring the war to an end. On 28 July 1915 he addressed a letter to the heads of the belligerent states, the object of which was said to be the arrangement of a truce. In February 1916 he addressed a personal letter to the Emperor of Austria, urging him to use his influence in shortening the war. The following month he suggested in an appeal to the nations involved that each should clearly state its desires, but should also be ready to make the necessary sacrifices of pride and particular interests. Two months later Monsignor Bonzano, then Papal Delegate at Washington, presented a personal message to President Wilson in which the Pope suggested that the United States might volunteer to intervene among the belligerents of Europe. As Berlin and Washington, at that time, were in the midst of a diplomatic crisis, the President's reply, while sympathetic, was not encouraging. On 16 Jan. 1917, he formally and enthusiastically approved of President Wilson's peace note of 18 Dec. 1916, and through his nuncios and legates at the chancelleries of the belligerents sought to have it heeded.

Austria's attempt to secure a separate peace, coupled with the German Socialist-Centre demand for a peace "without annexations and indemnities," ultimately found expression in the Pope's famous peace note of 1 Aug. 1917. This note was answered by President Wilson on behalf of the Allied and Associated nations (the United States having been drawn into the war on 6 April 1917 as a result of Germany's U-boat

campaign), Mr. Wilson stating that the ideals which the Holy Father had expressed were their ideals, but that he saw no signs of the enemy acknowledging or accepting them. In his note Benedict XV said: "As to the damages to be repaired and as to the war expenses, we see no other means of solving the question than by submitting as a general principle complete and reciprocal condonation, which would be justified, moreover, by the immense benefit to be derived from disarmament, so much so that no one will understand the continuation of a similar carnage solely for reasons of an economic order." Prior to the issuance of this note, the Pope had rebuked the German and Austrian governments for the ruthless use of the U-boat and on another occasion he sent notes to the two Kaisers condemning as "a wanton massacre" the loss of life at the Paris church of Saint Gervais caused by bombardment with the German 70-mile range gun.

Although the Pope neither asked for nor suggested representation at the Paris Peace Conference he sent thereto as an observer, Monsignor Ceretti who after became Apostolic Nuncio at Paris after a 16-year break in diplomatic relations between the Vatican and France. In a letter to President Wilson, on the eve of the Conference, the Pope pleaded for aid to the oppressed nationalities, and when the Conference had framed the Treaty of Versailles, the Pontiff issued a letter declaring that as the head of the Church he would do "all in his power to support the decision of the delegates."

Notwithstanding the fact that his pontificate (1914-22) covered one of the most critical periods in the world's history, Benedict XV not only succeeded in increasing the prestige of the church at home and abroad in a religious way, but also in recovering something of the political prestige of the Vatican as a factor among the governments of the world. His position at the beginning of his reign was the most difficult any Pope had ever been confronted with. His attitude of strict neutrality seemed only to intensify his troubles. But when the conflict was over and passions had cooled to some extent, it was generally recognized that he had been right. At the beginning of the pontificate of Benedict XV about 20 nations had formal diplomatic relations with the Vatican; at its close there were 31. Relations with France had been restored and the British Empire had taken steps to have a more intimate representation. Relations with Portugal also had been restored and negotiations were pending for an exchange of envoys with Tokio. The Pope's influence upon Italian politics was constructive. In January 1919 he completely freed Italian Catholics from all inhibitions against participation in Italian political movements. His relations with the Quirinal were more cordial than those of any Pontiff since 1870, and the celebrated "Roman Question" was left by him in a fair way of settlement.

During his reign Benedict added the names of Margaret Mary Alacoque, Gabriel dell' Addolorata and Joan of Arc to the roll of saints. His most notable pronouncement was his encyclical ('Ad Beatissimi Apostolorum Principis,' 1 Nov. 1914. In it he discussed many matters

of world-wide importance; emphasized the moral disorders of the day; the disregard for authority; unjust quarrels between classes and referred to material prosperity as becoming the prominent object of human endeavor as if there were nothing higher and better to be gained. From the beginning he manifested a sincere friendship for America.

BENEDICT COLLEGE, a Baptist co-educational institution, founded in 1870 and located at Columbia, S. C. In 1922-23 it had a faculty of 35 members, 600 students and property valued at \$600,000. Income figures not available. Rev. C. B. Antisdel, LL.D., is president.

BENJAMIN, Park, American patent lawyer and author: b. New York City 11 May 1849; d. Shippan Point, near Stamford, Conn., 21 Aug. 1922. He was graduated from Trinity School, New York, in 1862 and from the United States Naval Academy in 1867. After making several cruises with Admiral Farragut, he was promoted to ensign and assigned to duty at the European station. Tiring of naval life, he resigned from the service in 1869 and studied law at the Albany Law School from which he was graduated with the degree of LL.B. in 1870. He then entered Union College, pursued a wide range of scientific studies and was graduated with the degree of Ph.D. in 1877. In the meantime he joined the staff of the *Scientific American* as associate editor and held the position for six years until 1878. From 1881 until 1892 he was editor-in-chief of 'Appleton's Cyclopedia of Applied Mechanics.' He built up his practice at the same time and developed into one of the foremost patent attorneys in the country. Mr. Benjamin was married three times. His first wife was Miss Helen Campbell, who died soon after marriage without issue; his second was Miss Isabel Torrans, by whom he had three children—Park Benjamin, Jr., Mrs. Frederick W. Goddard and Mrs. Margery Kenney, his third was Miss Ida Crane, whom he married in 1891 after the death of the second Mrs. Benjamin. By his third wife Mr. Benjamin had two children—a son, Romeyn P. Benjamin, and a daughter, Dorothy, who married Enrico Caruso about three years before the great tenor's death. Mr. Benjamin published: 'Early History of Electricity' (1895); 'History of the United States Naval Academy' (1900), and numerous essays in *The Forum*, *The Independent* and various other periodicals. He was a member of the Military Order of the Loyal Legion and foreign member of the British Chartered Institute of Patent Agents.

BENSEL, John A., American engineer: b. New York City, in 1863; d. Bernardsville, N. J., 20 June 1922. After graduation at Stevens Institute in 1884, he gained practical knowledge as a rodman for the New York Aqueduct and the Pennsylvania Railroad. He next was assistant engineer of docks and terminals for the Pennsylvania Railroad and the New York Dock Department, after which he spent six years (1889-1895) in charge of construction on the North River (New York) water-front. Then he became chief engineer and Commissioner of the Dock Department and in 1911 was made

State engineer. He was also consulting engineer for improvement of a mile of water-front on the Delaware River in 1895-98. After 1919 he was a member of the board of consulting experts for the New York and New Jersey vehicular tunnel and was frequently a member of important conferences on municipal engineering projects. In the Great War he commanded the 125th Battalion of Engineers.

BENSMAN, Matteo, Russian-Jewish composer; b. Minsk, Russia, in 1877; d. New York, N. Y., 7 April 1922. He was a pupil of Rubinstein, studied in Italy and was a professor at the Petrograd Conservatory before the Russian Revolution. His compositions attracted much attention in Europe. His oratorio, 'La Nunciazione,' won for him the Gold International Medal when given in Milan in 1905. He wrote three operas, 'Nuova,' 'Erasmus' and 'The Jews,' the latter based on Chirikoff's drama. His symphonic work, 'Palestrine,' for orchestra, chorus and ballet, was performed under Gustav Mahler's direction in Vienna. Mr. Bensman came to New York in 1921 and had a benefit concert at Carnegie Hall, New York, on 24 Dec. 1921. A concert was planned for 9 April 1922 but the composer failed to raise enough funds to meet the demands of the Musical Union and he died of heart disease, brought on by hardships, overtaxed strength and general weakness two days before the appointed concert. A memorial concert was held on 9 April and the Bensman Concert Association was organized to make his works known to the American public. Bensman counted among his friends Mascagni, Puccini, Leoncavallo, Zimbalist, Stokowsky and many other noted musicians.

BENTON, Guy Potter, American university president; b. Kenton, Ohio, 26 May 1865. He received an A. B. degree from Baker University, and a D.D. degree in 1900; an A.M. degree from Ohio Wesleyan, and a D.D. degree in 1905; an LL.D. degree from Upper Iowa University (1906), University of Vermont (1911), Middlebury College (1912), University of Mississippi (1914), Miami University (1916); and an L.H.D. degree from Norwich University (1916). He studied also at the University of Wooster and in Berlin. From 1890-95 he was Superintendent of Schools at Fort Scott, Kan., and Assistant State Superintendent of Public Instruction (Kansas) 1895-96. Other important educational positions which he has occupied have been the following: Professor of History and Sociology, Baker University, 1896-99; President of Upper Iowa University, 1899-1902; of Miami University, 1902-11, and of the University of Vermont, 1911-19. Since April 1921, he has been Chief Educational Consultant and President of the University of the Philippines, and he is a member of the Philippine Textbook Board. He was a member of the Kansas State Board of Education (1899); Secretary of the Ohio Conference of College Deans and Presidents (1903-05); President of the Ohio College Association (1904); Chairman of Committee from the Ohio College Association, on an educational policy for Ohio (1904-05); President of the Ohio Conference of College Presidents and Deans (1906),

Ohio Y. M. C. A. (1909-10). From 1910-16 he was Secretary of the National Association of State Universities, and from 1916-18 President of that body. Since 1910 he has been an elector in the Hall of Fame. From 1911-20 he was a member of the National Inter-Fraternity Conference, and 1912-13 President of the Vermont Free Library Commission; Chairman of the Vermont State Board of Education (1914), National President of the Phi Delta Theta Fraternity (1912-14); Director of the National Educational Association (1912-13), (1914-16); Vice-President (1912-13). With the American Expeditionary Forces he held important positions in the Y. M. C. A., and was Chief Educational Director, American Army of Occupation, with headquarters at Coblenz, Germany, until 30 June 1919. Honorably discharged from the United States Army, 24 July 1919, he was awarded the Distinguished Service Medal for war service by the President of the United States.

BEN YEHUDA, Eleazar, world-famous Hebraist; b. Lithuania in 1858; d. Jerusalem, 16 Dec. 1922. He was the son of Jehudah Perlman and he adopted the name (the Son of Yehuda) by which he was known, in the same way as his son, the editor of the *Doar Hayon*, adopted the name Ben Avi (son o' my father). At the time of the Russo-Bulgarian War he became attracted by the idea of the national resurrection of the Jewish people in the land of Israel and went to Paris to study medicine with the intention to practice in Palestine. While in Paris he published his first article in Smolenskin's journal, *Ha-Shakar*, a powerful plea for the regeneration of the Jewish people by means of the Hebrew language. In 1881 he and his wife went to Palestine and founded the first Hebrew-speaking household in the country. He then adopted the name Ben-Yehuda. He became editor of the Hebrew journal *Habazeleth*, in which he advocated the founding of Jewish colonies and the institution of the Hebrew language as the National tongue. He soon began his great work, the compilation of a Hebrew dictionary. At the outbreak of the World War he left Palestine and came to the United States where he continued his work and celebrated his sixtieth birthday in 1918. He returned to Palestine after the armistice and continued his work. At the time of his death a home was being erected for him by his admirers in the United States, who had collected the necessary funds. His funeral was the largest ever seen in Palestine; more than 30,000 Jews followed in procession. All Jewish shops and institutions were closed and three days of mourning were proclaimed. He was buried on the Mount of Olives. One of his followers says: "His name will go down to history as one of the spiritual builders of modern Hebrew and of the new old Land of Israel." In spite of ill-health for years, he not only fought valiantly for nationalism and the Zionist movement, but worked for 20 years upon the colossal Hebrew dictionary.

"As a writer he labored only with national objects in mind. He created the Hebrew language, it is claimed; but, in fact, he demonstrated by his conduct and his literary achievements that there was a Hebrew language, and,

if there was not, he was fully determined to create it. In his zeal he may have overstepped the limits of philological propriety, but he was not primarily concerned with philology; he had in mind the national value of doing what he did in his writings and in his monumental work, the 'Millon,' making the Hebrew language expressive of the unity of the Jewish people and of the ancient desire for rebirth." See *The Jewish Chronicle* (London, 22 Dec. 1922); *New Palestine* (New York, 19 Jan. 1923); and *The Maccabean* (New York 1918).

BEREA COLLEGE, a non-sectarian co-educational institution, founded in 1855 and located at Berea, Ky. In 1922-23 it had a faculty of 78 members (13 in College Department), 2,003 students (310 in College Department), property valued at \$3,807,740.30 (at close of year 30 June 1922). Its income was \$229,920.65 for the year 1921-22. William James Hutchins, D.D., is president.

BERMUDAS, a group of over 350 small islands which lie 580 miles off the coast of North Carolina and form a colony of Great Britain. Only 20 of the islands are inhabited. The area is 19.3 square miles and the population in 1921 was 21,987, of whom 7,500 were whites. About one-half of the population are members of the Church of England. Education is compulsory. There are no government schools but assistance is given in the form of grants and fees to those schools which measure up to government standards and submit to government inspection. There are 48 primary schools of which about 30 are in receipt of the government grant, which averages \$20,000 yearly. In addition there are garrison and naval schools and four secondary schools. Hamilton is the capital of the colony. It has a population of 2,700. The government is vested in a Governor, assisted by an Executive Council of six appointed by the King, a Legislative Council of nine, and an Assembly of 36 members. The colony has become popular as a winter resort and in the season is visited by about 25,000 Americans and Canadians. The chief sources of revenue are the customs, light-house tolls, post office receipts. The public debt of the colony is \$420,000. About 4,000 acres are under cultivation. Onions, potatoes and other vegetables are the chief crops. In 1920, the imports of the colony amounted to \$6,765,980 and consisted mostly of foodstuffs, cotton goods, hardware, coal, sugar, clothing, leather and leather manufactures. The greater portion of the trade is with the United States. There is a private telephone system with 1,600 miles of wire and 800 subscribers. There is also a military telephone system of over 200 miles of line. Submarine cables connect the colony with Nova Scotia, Jamaica and Turks Island. There are 20 post offices in the colony. The savings banks had on deposit at the last report the sum of \$201,852 to the credit of 2,270 depositors.

BERTILLON, Jacques, French statistician and criminologist: b. Paris, 11 Nov. 1851; d. there, 7 July 1922. With his brother, Alphonse (1853-1914), he originated a system of identification for criminals, which has, however, been superseded by the finger-print system. Since 1883 he had been chief of the Bureau of

Vital Statistics in Paris, having succeeded both his father and his grandfather in this office. He was the author of 'La Statistique humaine en France' (1880). See A. Bertillon, 'Identification Anthropométrique' (Paris 1893); Boies, 'Science of Penology' (1901); and R. W. McClaughry, 'The Bertillon System of Identification' (Chicago 1896).

BESELER, Hans von, German general: b. Pomerania in 1850; d. Berlin, 22 Dec. 1921. In 1868 he entered the German army and became major-general in 1904. He commanded the army that captured Antwerp 10 Sept. 1914. His force consisted of the third reserve corps, two Ersatz divisions, a marine division, two Landwehr brigades, an artillery brigade, a pioneer brigade and a Bavarian division numbering approximately from 125,000 to 150,000 men. The Germans concentrated about 200 guns and having shelled Mechlin on 27 August proceeded to bombard Antwerp. Subsequently General von Beseler was stationed on the eastern front, where he captured a strong Russian fortress in 1919. Afterwards he made successful charges against the Russians on the Dvina River. Under the German occupation of Poland he was Governor-General. In 1918 he fled from Warsaw by hiding on a river barge. A picture of General von Beseler appears in 'Nord und Sud' (14 Jahrgang, Band 160, März. 1917). See 'The Great War,' by George H. Allen, Henry C. Whitehead and Admiral F. E. Chadwick (Philadelphia 1916).

BESSARABIA, former province of the Russian Empire, which was joined to Rumania in March 1918. Its area is 17,146 square miles and its population 2,344,800. See **RUMANIA**.

BESSIE TIFT COLLEGE, an educational institution for women, belonging to the Georgia Baptist convention, founded in 1849 and located at Forsyth, Ga. In 1922-23 it had a faculty of 30 members, 273 students, property valued at \$410,000 and an income of \$145,000. Aquila Chamlee, D.D., B.A., Th.G., is president.

BEST, William Newton, American inventor: b. Quincy, Ill., about 1860; d. Brooklyn, N. Y., 11 April 1922. He devoted the greater part of his life to the invention of devices for burning oil for heat and held many patents for his inventions. He was president of the W. N. Best Furnace and Burner Corporation, New York, a member of the American Society of Mechanical Engineers, the American Institute of Mining and Metallurgical Engineers, the American Institute of Metals, the American Railway Mechanics Association and vice-president of the Goodwill Industries of Brooklyn.

BETHANY COLLEGE, a Disciples of Christ co-educational institution, founded in 1840 and located at Bethany, W. Va. In 1922-23 it had a faculty of 25 members, 305 students, and property valued at \$590,000. Income figures not given. Cloyd Goodnight, A.M., is president.

BETHANY COLLEGE, a Lutheran co-educational institution, founded in 1881 and located at Lindsborg, Kan. In 1922-23 it had a faculty of 43 members, 620 students, property valued at \$246,267.79, and endowment of \$210,000 and an income of \$99,284.75. Ernst F. Philblad, D.D., is president.

BETHEL COLLEGE, a co-educational institution under the supervision of the General Conference of Mennonites of North America, founded in 1886 and located at Newton, Kansas. In 1922-23 it had a faculty of 23 members, 280 students, and property valued at \$200,000. Its income for 1921-22 was \$37,411.97. J. H. Langenwelter, S.T.M., is president.

BETHLEHEM COLLEGE. See CHRISTIAN CHURCH.

BHUTAN, a semi-autonomous state in the Eastern Himalayas, bounded on the north and east by Tibet, west by Chumbi and Sikkim and on the south by British India. It has an area of 20,000 square miles and a population of a quarter million. From 1774 the native Bhutans and the British have had relations varying from the ordinary ones of trade to the sterner measures of hill warfare. In 1865 the British granted a subsidy of 50,000 roubles annually to the Bhutan government on condition of its good behavior. A supplementary treaty concluded in 1910 confines British interest to the external relations of Bhutan and leaves the latter entirely free in its internal administration. The subsidy was increased at the same time to 1,000,000 roubles annually. The head of the state is the hereditary Maharaja, Sir Ugyen Wangchuk, who assumed his post in 1907. The Bhutans are Buddhists nominally but the popular beliefs are a welter of superstition and devil worship or propitiation. There are no armed forces with the exception of the garrisons of the fortresses. Punakha is the winter capital and Tasichozong the summer capital. The natural products of the country are rice, millet, maize, wax, musk and silk. Guns and swords are manufactured. There are valuable forests in the country but their products never reach the world markets, remaining undeveloped for lack of capital. In normal years the trade with British India amounts to \$600,000 annually but it has decreased in the last few years.

BIBLE IN PUBLIC SCHOOLS. Daily reading of the Bible in public schools is required by law in six States: Alabama, Georgia, Massachusetts, New Jersey, Pennsylvania and Tennessee. In all of these States, except Georgia and Alabama, the law prescribes that the reading must be without comment. Reading from both the Old and the New Testaments is required in Georgia, but only the Old Testament is specified in the New Jersey law; the laws of the other States do not require any special part of the Bible to be read. The amount which must be read varies considerably. Georgia requires that at least one chapter be read each day; Pennsylvania requires at least 10 verses to be read each day and so does Tennessee; New Jersey directs the reading of at least five verses. Massachusetts and Alabama do not specify the amount to be read. At the written request of a parent or guardian a pupil may be excused from the Bible reading in Georgia and Tennessee. In Massachusetts a pupil whose parent or guardian informs the teacher in writing that he has conscientious scruples against Bible reading is not required to read from any particular version thereof or to take any personal part in the reading. The courts of California, in a decision

relating directly to the King James version, decided late in 1922 that it is a sectarian book and under the law must not be employed in public schools. Similar decisions have been rendered in other States.

BIBLE SOCIETY, American. An organization founded in 1816 to promote a wider circulation of the Bible. The society pursued its regular course of business in its 106th year. It steered clear of theological controversies and differences. There was strict adherence to the established principle of the society to translate literally from the original Scriptures, publish the same without note or comment, sell strictly at cost price, and make gifts or grants for missionary purposes where necessary in order that every person may possess a copy of the Bible. The various departments are under the direction of committees composed of prominent and capable men in their special lines. Translation and revision work was done in the Luragoli, Quechua, Portuguese, Chinese Phonetic, Zulu, Kpelle, Armeno Kurdish and Yiddish, and planned for or begun in various other dialects. A decided departure in the printing program was the discontinuance of doing its own printing and the allotting of contracts to commercial presses. Although an American Bible Society, yet it has a world program. It has work both at home and abroad. In the United States it functions through nine agency headquarters covering the entire country. Through these agencies it ministers to churches, cities, counties, mission boards and missionary and philanthropic workers, and undertakes to meet the last individual. It deals with special classes, such as immigrants, laborers and nationalities, in 1922 distributing through its Domestic Agencies 1,200,000 copies of the Scriptures in 95 different languages. The Society has established agencies in 12 foreign centers. These cover every country in the western hemisphere south of the United States. Japan, China, Siam, Philippines, and the Near East, and special grants of Scriptures were made to European countries and different missions in Africa. The total circulation, according to the latest annual report was 4,861,181 volumes in over 150 different languages and dialects. The Society's budget for 1922 totaled \$1,023,767. The officers of the society are: President, Churchill H. Cutting; General Secretaries, William I. Haven and Frank H. Mann; Recording Secretary, Lewis B. Chamberlain; Assistant Secretary, J. L. McLaughlin; Treasurer, Gilbert Darlington. The Society has its headquarters at The Bible House, Astor Place, New York City.

BICYCLING. This sport retained its popularity during the year 1922. The six-day race, held at Madison Square Garden, New York City, 3-9 December, was well attended. Seven teams finished the race. Of these Goulet-Belloni and Brocco-Coburn rolled off 2,457 miles and 8 laps and garnered 487 and 292 points respectively. The Egg-Eaton team finished one lap behind these leaders but garnered 439 points, while the Grenda-McNamara team finished two laps behind but secured 882 points. The record for this race is 2,625 miles made by Egg and Dupuy in 1916. In amateur competitions only one new record was hung up in 1922. This was for the

one mile unpaced event and was made by Mo-beck at Newark, N. J., on 2 July when he covered the distance in 1 m. 55 secs. A new record was also made in the unpaced amateur road competitions for three miles. This was made by Beckman at Ridgefield Park, N. J., 9 April 1922 when he rode the three miles in 7 m. 13 secs. On 30 May Nolen rode the 100 miles from Milwaukee to Chicago in the record time of 4 hrs. 36 min. 30 secs. Gronkowski on 18 March at Buffalo did the three-quarter and one mile in 1.35 $\frac{3}{4}$ and 2.05 $\frac{3}{4}$, respectively, thereby making two records in the amateur indoor flat floor competition. In professional events Goulet made a new record for the 10-mile human paced event, covering this distance at Newark on 31 Aug. in 19.25 $\frac{3}{4}$. Willie Spencer won the national professional sprint championship with a total of 35 points. The national amateur championship was won by Willie Grimm with a total of 16 points. George Chapman won the professional pace championship with 201 points.

BIDDLE UNIVERSITY. See JOHNSON C. SMITH UNIVERSITY, CHARLOTTE, N. C.

BILLIARDS. See SPORTS.

BIOLOGICAL SURVEY, United States Bureau of. The work of the Bureau of Biological Survey of the United States Department of Agriculture during 1922 as in previous years was concerned chiefly with investigations relating to the wild birds and mammals of North America for the purpose of protecting and utilizing the beneficial and harmless species and of destroying or controlling those having destructive habits. This has involved both field and laboratory work on a considerable scale. Investigations into the value of wild birds and mammals as a national asset yielded information showing that they are of far greater value than has been generally understood. These studies have covered the value of insectivorous birds to the farmer, the recreational value of game and non-game birds to the public, and the money value of the game meat and furs taken each year, in addition to the support of industries and other economic activities attendant upon the utilization of these resources. Progress was made in the technical investigations of several groups of mammals, notably the shrews and chipmunks of North America, and reports on the field studies of the mammals of Wyoming and Oregon were nearly completed. Important information was obtained relative to the distribution and migration of birds. The extraordinary interest shown in the bird-banding phase of these investigations has resulted in enlisting the co-operation of a large number of people throughout the country. As a consequence an invaluable mass of information is being built up which will give an insight into the movements of migratory and other birds such as has never heretofore been available. Special studies were made of wild life conditions in national forests, particularly in regard to the predatory animals and injurious rodents. The campaign of the Bureau against such predatory animals as wolves, coyotes, mountain lions, and others has continued vigorously, and approximately 80,000 of these destroyers of livestock and game were killed in the extended trapping, den-hunting, and poisoning operations. A severe

outbreak of rabies among coyotes in Washington and neighboring States was suppressed. During the organized campaign against prairie dogs, ground squirrels, and other rodents destructive to agricultural crops, 17,678,041 acres of Federal and private lands were treated with poison baits, which resulted in the elimination of a great proportion of these pests. A second poison treatment was given to more than 8,000,000 acres, bringing the total amount of lands over which most of the rodent pests have been destroyed since 1916 up to more than 10,000,000 acres of the public domain and 93,000,000 acres of land owned by States and individuals. The establishment of a well-equipped laboratory at Denver, Colo., for the purpose of investigating poisons, and their preparation and use in the destruction of animal pests, has added very substantially to the effectiveness of the campaigns.

The need of work of this character is plain in view of the fact that more than \$20,000,000 worth of livestock is estimated to have been destroyed annually on the Western ranges, in addition to enormous quantities of game birds and animals; and that more than \$300,000,000 was being lost each year through the prairie dogs and other field rodents, and more than \$200,000,000 annually from the depredations of house rats. The work of the Bureau during the year has brought about an important decrease in these losses. As a result of information furnished by the Bureau, public sentiment has developed until there is apparent an ever-increasing intolerance of the presence of house rats and mice and the waste due to their destructive activities. Many local campaigns against rats were waged throughout the country during the year, and the Bureau has responded to innumerable requests for information, for practical plans of organization, and for effective methods of combating these animals in concerted community efforts.

Important progress has been made in investigations pertaining to the rearing of wild fur-bearing animals in captivity. About 500 fur farms, mainly for raising silver foxes, are established in 25 States. They contain from 12,000 to 15,000 silver foxes and the total investment amounts approximately to \$8,000,000. Investigations at the experimental fur farm of the Biological Survey in northern New York have yielded valuable information concerning the parasites of fur bearers and their treatment, and also regarding the physiology of fur bearers both in health and disease, and the effect of various remedial drugs upon them. The discovery at this farm that martens mate in July and August is a valuable contribution to the knowledge required for the successful rearing of these animals in captivity. Special investigations were also launched regarding fur-farming conditions in Alaska and on the Aleutian Chain.

Investigation of food habits of wild life has centered about the relations of birds to agriculture, but progress was made also on an economic study of toads, and the contents of numerous stomachs of mammals were analyzed. During the year arrangements were made with three States for preserving the stomachs of animals killed as vermin by game wardens and

by employees of game farms. By means of such co-operation it is planned to get a good basis of fact regarding the vexed vermin problem, consideration of which in the past has been based largely on conjecture and speculation. Investigations of reindeer in Alaska yielded important results which have been published in bulletin form by the department,—data and recommendations referring chiefly to the control of parasites, improvement of herd management, and allotment of grazing areas. Some herd owners have already adopted better methods of handling their animals as suggested by the Bureau's experts and report very satisfactory results. Plans were started for the cross-breeding of reindeer with the large woodland caribou with a view to increasing the meat output. It is believed that through such cross-breeding and the selection of breeding stock in the herds, the meat output of the reindeer may be increased from the present average weight per carcass of about 150 pounds to about 300 pounds. By means of educational work, and especially in the administration of the Migratory-bird Treaty Act, the Biological Survey is actively fostering interest in the conservation and increase of valuable birds and animals. Beneficial results following Federal protection of migratory game-birds are evidenced by reports from all parts of the country showing that these birds are steadily increasing in numbers, with corresponding increase in the amount of game available for sportsmen. The widespread interest in our game supply and the importance of its maintenance are indicated by the fact that more than 4,000,000 licenses were issued to hunters in the United States in 1921, and it is estimated that not less than 2,000,000 other persons hunted without licenses under provisions of the laws of various States.

E. W. NELSON,

Chief, Bureau of Biological Survey.

BIOLOGY. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF; ZOOLOGY.

BIRDS. See ZOOLOGY.

BIRDS, Game. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF.

BIRMINGHAM-SOUTHERN COLLEGE, a co-educational institution at Birmingham, Ala., formed by the consolidation of Birmingham College with the Southern University and controlled by the Alabama and the North Alabama conferences of the Methodist Episcopal Church, South. The consolidation was effected 30 May 1918, and the new institution was opened for the reception of students 11 September following. Southern University was located at Greensboro, Ala. The assets of the Birmingham-Southern College consists of 70 acres of land; a main building, three stories high, containing a chapel, a study hall, two society halls, and seven recitation rooms; four modern dormitory buildings; a gymnasium erected in 1911; a science hall opened in 1916; five residences for professors, and a library of 15,000 volumes. Productive endowments total \$200,000; unproductive endowments, about \$100,000; endowment pledges, over \$600,000. In addition, the two Alabama conferences levy an annual assessment on their members of \$20,000

for the maintenance of the college. The college offers courses leading to the undergraduate degrees of Bachelor of Arts and Bachelor of Science, and to the graduate degree of Master of Arts. Several scholarships and medals are awarded. Under certain conditions, special courses may be pursued. Pre-medical and preparatory courses for other professions are available. Extension courses in Spanish, Education, Religious Education, Accounting and Journalism are given. The college also maintains a summer school. The total student enrollment for the year 1922-23 was 797. The faculty numbers 40 members. Dr. Guy Everett Snively is president.

BIRTH RATE. See VITAL STATISTICS.

BISHOP COLLEGE, a Baptist co-educational institution for colored students founded in 1881 and located at Marshall, Texas. In 1922-23 it had a faculty of 20 members, 336 students, property valued at \$300,000 and an income of \$100,000. Charles H. Maxson, B.S., is president.

BJERREGAARD, Carl Henry Andrew, American librarian and author: b. Fredericia, Denmark, 24 May 1845; d. New York City, 28 Jan. 1922. He studied at Fredericia College and thereafter at the University of Copenhagen from which he was graduated in 1863. In 1866 he was graduated from the Military Academy of Denmark and then served as lieutenant in the Danish Army for five years. Thereafter, he was professor of botany at Fredericia College for two years, resigning to join the Danish Legation to the Court of Russia with which he also served two years. He came to the United States for political reasons in 1873 and in 1879 was made librarian of the Astor Library, now the Astor Branch of the New York Public Library. He was still a member of the New York Public Library staff at the time of his death. He was an authority on mysticism and wrote and lectured extensively on that subject. He published: 'Mysticism and Nature Worship' (two volumes); 'Being and the Philosophical History of the Subject'; 'Sufi Interpretation of Omar Khayyām, and Fitzgerald' (1902); 'History and Doctrine of Mysticism' (16 volumes, unfinished); 'Jesus, a poet, a prophet, a mystic and a man of freedom' (1912); 'The Inner Life and the Tao-Teh-King' (1912); 'The Great Mother' (1913); 'Sufism, Omar Khayyām and Fitzgerald' (1915). He was also a collaborator on the 'Encyclopedia Americana,' 'Standard Dictionary,' 'Jewish Encyclopedia,' and the 'International Encyclopedia.' Holding that youth can be preserved by the adoption of a new productivity, he taught himself painting at the age of 70 and produced a large number of sketches and pictures in oil and water color, drawing entirely from memory and frequently portraying scenes beheld only in his dreams.

BLANK BOOK MAKING AND BOOK BINDING. See BOOK BINDING AND BLANK BOOK MAKING.

BLAST FURNACE PRACTICE. See METALLURGY.

BLINDNESS IN THE UNITED STATES. Statistics compiled by the Bureau

of the Census on the causes of blindness in the United States, and published in the *Journal of the American Medical Association* show that there are 52,567 blind persons in the country, in 35,788 of whom definite information as to the cause of blindness was obtained. In 13,818, or 38.6 per cent of the 35,788 for whom the cause was reported, the blindness was caused by some specific disease of the eye, such as cataract or glaucoma; and in 5,623 cases, or 15.7 per cent, it was a result of some general disease, such as measles, meningitis or scarlet fever. Accidents were responsible for 5,913 cases, or 16.5 per cent of the total. Of this number 1,429 persons lost their sight through explosives or firearms. Cataract, the leading cause, was reported by 4,896, or 13.7 per cent. Glaucoma, ranking next, was reported by 1,932, or 5.4 per cent. Atrophy of the optic nerve was given as the cause by 1,756, or 4.9 per cent. Ophthalmia neonatorum, or "babies' sore eyes," was reported by 1,198, or 3.3 per cent of the total number reported. Recent statistics of admissions to schools for the blind show that there has been a marked decrease in the amount of blindness due to this cause. These figures show that only 14.7 per cent of the new students admitted in 1917-18 were reported blind from ophthalmia, as against 24.2 per cent. of the students then attending who had entered the previous year. This decrease reflects the more general adoption of scientific methods of treatment, and especially the routine use of silver nitrate drops in the eyes of infants. The campaign to eliminate trachoma also appears to be successful.

BLUE MOUNTAIN COLLEGE, a Baptist educational institution for women, founded in 1873 and located at Blue Mountain, Miss. In 1922-23 it had a faculty of 25 members, 225 students, and property valued at \$350,000. Income figures not available for publication. William T. Lowrey, M.A., LL.D., is president.

BLUE RIDGE COLLEGE, a co-educational institution, under the supervision of the Church of Brethren, founded in 1899 and located at New Windsor, Md. Statistics for 1922-23 show a faculty of 22 members, 180 students, property valued at \$187,755 and an income, including aid received from the State of \$45,000. J. Maurice Henry is president.

BLUFFTON COLLEGE, a Mennonite co-educational institution founded in 1900, reorganized as college in 1914 and located at Bluffton, Ohio. In 1922-23 it had a faculty of 25 members, 300 students, property valued at \$496,303.49 and an income of \$66,779.16. Samuel K. Mosiman, Ph.D., Litt.D., is president.

BLUNT, Wilfrid Scawen, English poet, traveller and diplomat: b. Petworth, England, 17 Aug. 1840; d. Shipley, Horsham, Sussex, 11 Sept. 1922. His father, Francis Scawen Blunt, representative also of the ancient Cornish family of Scawen of Molennick, served in the Grenadier Guards. Young Blunt was educated at Stonyhurst and Oscott, and in 1858 entered the diplomatic service, being appointed to the Hague, Frankfurt, Madrid, Paris and Lisbon. He began early to show his love for adventure. When an *attaché* in Madrid he became a pupil of a famous *Matador* and killed bulls in the arena.

He also served again in Frankfurt, thence in Buenos Aires and Berne, but resigned in 1869. In that year he married Lady Anne Noll, daughter of the first Earl of Lovelace, a name of poetic tradition, who, on her father's death, succeeded to the barony of Wentworth and died in 1917. In 1872, on the death of his elder brother, he inherited Crabtree Park. The next 10 years he spent in travel in Arabia, Syria, Persia and Mesopotamia. With his wife he went through Spain on horseback during the Carlist troubles and explored the mountains of Algiers and Asia Minor. In 1876 he took a perilous journey to Mount Sinai and through Mesopotamia into unknown regions beyond. These travels inspired his book, 'The Future of Islam.' He was in Egypt when the military émeute under Arabi occurred in 1881; and he took part in the affair, to the annoyance of the British government, having constituted himself a kind of unofficial plenipotentiary. After Tel-el-Kebir, he was active in Arabi's defense and continued to make himself a medium of communication with Mr. Gladstone. He bought an estate in Egypt and for many years continued to visit it. In 1882 he went to India and championed the Nationalists, as he had done in Egypt. Irish Nationalism next engaged his sympathies. He returned to England and unsuccessfully contested Camberwell as a Tory Home Ruler and in 1886, Kidderminster as a Liberal Home Ruler. In 1887 he was arrested in Ireland for calling a meeting in a proclaimed district and persisting in making a speech. He resisted arrest and made a violent speech at his trial, which ended in imprisonment in Kilmainham Gaol for two months. After that he devoted himself to writing to plead the cause for self-government in Egypt, India and Ireland and for Arabia in exile. His books are full of "indiscretions," private conversation with important personages (who never expected their utterances to appear in print), anecdotes varying in degrees of authenticity, trivial gossip, and notable judgments of insight, fearlessly set forth. In Cairo, Blunt was known as "the mad Englishman." It was said that "he would greedily swallow anything," and that "it was a favorite amusement with certain people to induce an intelligent donkey-boy to pose as a leading native and to pour horrible legends into his sympathetic ear." Lord Cromer's 'Modern Egypt' was in large measure a rejoinder to Mr. Blunt's 'Secret History of the Occupation of Egypt.' The opinion of England is that "Blunt will be remembered ultimately for his poetry." He was a real, even a great poet, and though he was many other things, too, professional diplomatist, politician, agitator, champion of little nations, traveller, diarist, horse-breeder — it was his poetry alone that really counted. He was a various man, wilful, prejudiced to the point of bigotry, a scorner of easy ways and the paths of compromise, a figure of mediæval picturesqueness full of charm and fascination in an age peculiarly adapted to enrage him at every point. 'My country right or wrong,' he improved into 'My country always wrong'; such a bourgeois virtue as patriotism was not for him, and yet he was a patriot on his own lines. Blunt's estate consisted of 2,000 acres.

He was a famous breeder of Arabian horses. His daughter, Judith, Lady Wentworth, married in 1899 the Hon Neville Lytton, son of "Owen Meredith," and grandson of Bulwer-Lytton, the novelist. Blunt's publications include: 'Love Sonnets of Proteus' (1880); 'Future of Islam' (1882); 'The Wind and the Whirlwind' (1883); 'Ideas about India' (1885); 'In Vinculis,' 'A New Pilgrimage' (1889); 'Esther,' 'Stealing of the Mare' (1892); 'Griselda' (1893); 'Satan Absolved' (1899); 'Seven Golden Odes of Pagan Arabia' (1903); 'Secret History of the English Occupation of Egypt' (1907); 'India under Ripon' (1909); 'Gordon at Khartoum' (1911); 'The Land War in Ireland' (1912); 'Poetical Works' (1914) and 'My Diaries' (2 vols., 1919 and 1920).

BOHEMIA, a constituent part of the new Republic of Czechoslovakia, formerly a crown-land of the Austrian-Hungarian Empire. Its area is 20,106 square miles with a population of 6,664,932. About 96 per cent of the population are of the Roman Catholic faith and 37 per cent are German-speaking. In the new republic Bohemia has nine electoral districts for the lower chamber and five for the senate. For production and industry see article CZECHOSLOVAKIA.

BOKHARA, officially the Bokharan People's Soviet Republic, a state of central Asia, bounded on the north by Russian Syr-Daria and Samarkand, south by Afghanistan, east by Ferghana and west by Khiva and the Russian Transcaspia. This state was founded in the 15th century and remained independent until 1866 when a war with Russia resulted in the loss of the Syr-Daria. A further treaty with Russia in 1873 practically made the state a dependency of Russia. In 1919 a revolution resulted in the expulsion of the reigning Amir and a Soviet government was established. The area of Bokhara is 79,000 square miles with a population of 3,000,000. The capital is Bokhara which has 75,000 inhabitants. Other cities are: Karshi, 25,000; Hissar, 10,000; Khuzar, 10,000; Charjui, Karakul and Kermine. Mohammedanism is the religion of the inhabitants. The country produces corn, cotton, hemp, silk, tobacco and fruit. Gold, salt and sulphur are mined. Bokhara exports silk to India and imports green tea, drugs, muslins and indigo. The Russian Trans-Caspian Railway traverses the country from Charjui to Tashkent.

BOLIVIA, an inland republic of South America, bounded on the north and east by Brazil, south by Paraguay and Argentina, and west by Chile and Peru. It has an area of 514,155 square miles and a population according to present estimates of 3,000,000. Of the population, 51 per cent are pure Indians, 27 per cent are mixed and the remainder white and negro. The whites number about 300,000. The principal cities and their populations are as follows: La Paz, the seat of the government, 107,252; Sucre, the capital, 29,686; Cochabamba, 31,014; Potosi, 29,795; Tarija, 11,644; Oruro, 31,360; Santa Cruz, 25,807; Trinidad, 6,096. The president of the republic is Dr. Bautista Saavedra. For administration purposes the republic is divided into

eight departments, three territories, 72 provinces, and 681 cantons ruled respectively by prefects, sub-prefects and corregidores.

Religion.—Roman Catholicism is recognized by the state but other forms are tolerated. Non-Catholics number about 27,000. The state expends annually about \$57,000 on the maintenance of the Church, a goodly part of this sum going toward the propagation of the faith among the Indians.

Education.—Primary education is free and compulsory. In 1922 there were 487 primary schools with 4,321 teachers and 56,470 pupils. There were 31 secondary schools with 187 teachers and 2,700 pupils. There are universities at Sucre and La Paz and there are schools of commerce in the larger centres and some special schools. The state spends yearly for education about \$1,700,000.

Agriculture.—About 5,000,000 acres are under cultivation but primitive methods obtain. Wheat, Indian corn, beans, barley, and potatoes are grown mostly for home consumption while coca, coffee, etc., are grown for export. Rubber is grown also in the territories and the tropical regions in the east of the country.

Mining.—Bolivia is rich in mineral deposits of a varied kind. It is claimed that within her borders may be found every mineral that men seek. The output of tin is about one-fourth of the world total. In addition, copper, silver, lead, zinc, gold, bismuth and antimony are mined in great quantities. There is a great oil field in the eastern part of the republic and development is expected in the next few years.

Trade and Commerce.—Bolivian exports consist mostly of tin, silver and rubber. The imports, consist of foodstuffs, cottons, linens, silks, wearing apparel, hardware, wines and spirits. Official statistics show a marked revival in Bolivian exports during the first six months of 1922. The exportations for the period amounted to 58,873 metric tons, valued at \$17,225,772, as compared with 48,996 tons, worth \$12,393,244, for the first six months of 1921, or an increase of 20 per cent in volume and 39 per cent in value. The biggest factor in this revival was the exports of tin concentrates, the total for the first half of 1922 having been 25,803 metric tons, as compared with 15,319 tons for the same period of 1921. These shipments were due to the increased demand from Great Britain and the United States, and a large part of them were probably from stocks on hand from 1921. It is reported that at the end of 1921 there were between 7,000 and 8,000 tons of tin concentrates on hand at the mines. The recent great rise in the rate of Bolivian exchange has been offset by the rise in the price of tin. Although imports for the first six months of 1922 showed a continued slump, they were beginning to increase during the latter part of the period, owing to the improved exchange situation and the depletion of stocks of imported merchandise. Importations for the period amounted to 49,713 metric tons, valued at \$9,065,859, as compared with 45,040 tons, worth \$15,272,264, for the corresponding six months of 1921, or an increase of 10 per cent in volume and a decrease of 40 per cent in value. Bolivian imports through the port of Arica, Chile, decreased from 29,940,881

pesos in 1920 to 14,226,873 pesos in 1921, while Bolivian exports through that port decreased from 52,165,891 pesos in 1920 to 6,218,179 pesos in 1921 (1 peso=\$0.365). Of the two principal countries supplying Bolivian imports, the United States has lost its lead of 1920 to Great Britain, but was still a close second in 1921, supplying over one-third in weight and nearly one-third in value of the Bolivian imports. Germany retains its position as third. The great shrinkage in American exports to Bolivia, aside from unfavorable dollar exchange, may in part be accounted for by the renewal in Bolivia of former trade connections with Europe and its cheaper goods and to the general business stagnation which has affected all importing countries. In Bolivian importations the United States during 1921 led in lubricating oils, autos, typewriters, machinery, electrical goods, and white sheeting, and had practically a monopoly in dynamite, paraffin paste, and lumber. In the last half year imports of rice, flour, and condensed milk from the United States were much heavier. Great Britain predominated in heavy steel products; cotton, woolen, and leather goods; carpets, and tea, and during the first six months also in sacks for metals. Germany was the chief source of hyposulphate of soda, toys, jewelry, and musical instruments, and also sold considerable quantities of hardware, steel products, aniline dyes, and novelties. India led in sacks for metals in the first six months of 1921, while Peru supplied nearly all of the sugar, kerosene, and gasoline. Since the state has no sea coast the foreign trade passes through the ports of Peru and Chile and some overland via Argentina. England and the United States are the chief buyers of Bolivia's exports.

Communications.—Bolivia has 1,656 miles of railway some of which are state-owned and operated. There are steamer routes on Lake Titicaca. All important cities are connected by cart roads aggregating a total mileage of 2,304. There are about 450 post offices and 4,000 miles of telegraph line. There are several wireless stations and there are about 30,000 telephones.

Banking and Finance.—Issue of notes is now confined to the state national bank, which has a capital of \$20,000,000 and is permitted to issue notes up to 150 per cent of its capital with the proviso that 50 per cent of the issue must be covered in gold. In 1921, the revenue of the state was \$19,625,199 and the expenditure slightly in excess of this amount. The public debt in 1922 amounted to \$29,513,652, of which about \$4,500,000 was external and the remainder internal and floating debt.

Army.—The army is made up of about 4,000 men of all arms. Military service is compulsory for all males from their 19th to their 50th year.

Government.—The executive power is vested in a President who is chosen by popular vote for a term of four years and who is ineligible for re-election. The legislative power is vested in two chambers—the Senate and a Chamber of Deputies. All who know how to read and write possess the suffrage. Senators, in number 16, are chosen for six years, and the 70 deputies are elected for terms of four years. The President is assisted by a cabinet of six departments or ministries—Worship and Foreign

Relations, Education and Agriculture, Public Works and Industry, Finance, Justice, and War and Colonization (Fomento).

History.—The outstanding event in the political history of the republic was the placing of a loan for \$24,000,000 with American bankers the proceeds to be used mainly in railway construction. The plans for the loan resulted in a series of fiery debates in the Congress of Bolivia and certain stipulations regarding the securities were removed from the final contract. The absence of a seaport retards the development of the republic according to the government. The arbitration of the Tacna-Arica dispute between Chile and Peru at Washington and the final settlement was regarded as likely to afford Bolivia independent access to the Pacific. Bitter comments were called forth in the Bolivian press over the prohibition imposed on Bolivia by the Allied powers of Europe forbidding the republic to incorporate German officers in its projected Supreme Military Council. It was expected that the republics of Argentina, Brazil and Chile would use their good offices to relieve Bolivia of this humiliation of her sovereignty. In the autumn the government called for bids for the construction work on the railway from Cochabamba to Santa Cruz. Estimates and plans must be filed by 1 June 1923 and the successful bidder is obliged to deposit 1,000,000 pesos as a guarantee of carrying out the work to its completion. The republic guarantees 8 per cent on the capital invested for a period of 25 years. The Standard Oil Company of New Jersey was awarded a concession of 1,000,000 hectares (2,470,000 acres) of oil lands. This company was successful over its European competitors through the fact that financial leaders of Bolivia were participants in the transaction.

BOLL WEEVIL, Cotton. See AGRICULTURE, UNITED STATES DEPARTMENT OF; COTTON; ENTOMOLOGY, UNITED STATES BUREAU OF.

BOLLWORM, Pink. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

BOLSHEVISM. See RUSSIA.

BONNAT, Léon Joseph Florentin, French painter: b. Bayonne, 20 June 1833; d. Paris, 8 Sept. 1922. At an early age he went to Spain and studied painting under Madrazo in Madrid. At the age of 21 he went to Paris and studied under Léon Coignet. Winning the Prix de Rome, he studied four years in Italy. His painting of "Adam and Eve" (1860), was bought by the gallery at Lille and was followed by the "Assumption" and in 1874 by "Christ on the Cross," a commission from the Palais de Justice, Paris. In 1877 his portrait of Thiers brought him fame and this was increased by his portraits of Victor Hugo, Jules Grévy, Don Carlos, Léon Coignet, Dumas and others; from that date he painted many of the leading men of Europe as well as France and America. He was made chevalier in the Legion of Honor and finally given the Grand Cross and made a member of the council of the Legion of Honor. At the time of his death he was president of the French Society of Artists and director of the Ecole des Beaux-arts, as well as its chief professor of painting. Many of Bonnat's works are scattered in our American galleries, both

public and private. The Metropolitan Museum of New York owns several canvases. The influence of Ribera and Velasquez is evident in his style. His collection of paintings worth 5,000,000 francs will go to the Louvre and the museum of Bayonne. Consult Claretie, 'Peintres et sculpteurs contemporains' (1884).

BONUS. See AMERICAN LEGION, THE.

BOOK BINDING AND BLANK BOOK MAKING. Eight hundred and sixty-nine establishments engaged primarily in book binding and blank book making in 1921 turned out products valued at \$63,854,000, as compared with products valued at \$66,021,000 turned out by 865 establishments in 1919. The value of the products turned out by the concerns engaged in this industry in 1914 was \$38,104,000. This industry, in addition to book binding and blank book making, includes also embossing, book gilding, paper ruling, paper cutting, card, book and paper edging, card beveling and bronzing. Of the 869 establishments reported in 1919, 321 were located in New York, 88 in Pennsylvania, 78 in Massachusetts, 74 in Illinois, 45 in Ohio, 41 in California, 33 in Missouri, 24 in New Jersey, 18 each in Michigan and Wisconsin, 14 in Minnesota, 11 each in Indiana and Washington, 10 each in Connecticut and Maryland, 8 in Louisiana, 6 each in the District of Columbia, Iowa and Oregon, 5 each in Maine and Texas, 4 in Utah, while the rest, one, two or three to each of several States, were scattered throughout the country. The number of persons engaged in the industry in 1921 was 20,966, as compared with 25,287 in 1919. Salaries and wages paid in 1921 totaled \$26,209,000, compared with \$26,113,000 in 1919. Materials used in 1921 cost \$19,886,000, compared with \$23,235,000 in 1919.

BOOT AND SHOE INDUSTRY. Statistics compiled by the United States Bureau of Census and made public in December 1922 show that during the 12-month period, from 1 Nov. 1921, to 31 Oct. 1922, there were manufactured in the United States 318,424,917 pairs of footwear (other than rubber), of which 27.4 per cent was men's, 6.8 per cent boys' and youth's, 32.2 per cent women's, 12.2 per cent misses' and children's, 7.2 per cent infants', 2.5 per cent athletic and sporting, 3.1 per cent canvas, and 8.6 per cent all other, including slippers, moccasins, etc. This 12-month output exceeds that of the pre-war year of 1914 (292,666,468 pairs) by 25,758,449 pairs and is only 12,799,711 pairs less than the peak production of 331,224,628 pairs in 1919.

The business depression in 1921 brought down the prices of footwear, which had reached their peak about 1919-20. Retailers reduced their stocks which left many factories with insufficient work; and while the American public bought nearly as many shoes, it refused to pay war prices and the volume of sales measured in dollars marked a low level. Conditions began to improve in the early months of 1922 and by the end of the year, the normal level of the industry had been practically reached.

Boot and Shoe Exports.—The export trade, which was very promising at the opening of the World War, during the past three years

showed a tremendous decline. In 1920, the United States exported 16,842,000 pairs of shoes of all kinds, valued at \$67,145,000. In 1921, the exports dropped to 8,958,000 pairs, valued at \$24,679,000. During 1922 the United States exported to various foreign countries 5,404,662 pairs of leather boots and shoes (1,878,259 pairs of men's, 2,280,065 of women's, and 1,246,338 pairs of children's). Cuba, Canada, United Kingdom, Mexico, and Jamaica were the predominating markets for both men's and women's shoes, and these five countries received in 1921 and 1922, respectively, 1,009,708 and 1,226,468 pairs of men's and 1,121,000 and 1,617,205 pairs of women's boots and shoes of leather. It is most encouraging to note that during 1922 shipments to all of these countries, except Mexico, showed an increase as compared with 1921.

In 1919, the United States Census Bureau divided the shoe industry under three heads—shoe factories, boot and shoe findings and boot and shoe cut stock.

Boot and Shoe Findings.—Under this head are classed articles incidental or accessory to the manufacture, trimming and the care of shoes, such as laces, polishes, shoe trees, rubber heels, arch supports, etc., in fact, practically everything connected with shoes aside from leather. In 1921, the last year for which complete statistics are available, 344 establishments engaged primarily in the manufacture of shoe findings turned out products valued at \$39,117,000, compared with products valued at \$62,825,000 turned out by 427 establishments in 1919. The average number of persons employed by the boot and shoe findings establishments in 1921 was 5,916, compared with 8,941 in 1919. Salaries and wages paid out in 1921 amounted to \$8,568,000, compared with \$10,806,000 paid out in 1919. Materials used in 1921 cost \$22,931,000, compared with \$40,428,000, representing the cost of materials used in 1919. These figures cover only establishments reporting products valued at \$5,000 and more. Of the 344 establishments reported in 1921, 217 were located in Massachusetts, 56 in New York, 15 in Missouri, 12 in New Hampshire, 9 in Pennsylvania, 7 in Maine, 6 in Rhode Island, 5 in New Jersey, 4 each in Ohio and Wisconsin, 2 each in Connecticut and Illinois and 1 each in California, Kentucky, Maryland, Michigan and Texas. According to the Census Bureau, some of the establishments reported in 1919 had gone out of business in 1921, while others had so changed the character of their operation as to require classification in some other industry.

Boot and Shoe Cut Stock.—During 1921, 226 establishments engaged in the manufacture of boot and shoe cut stock turned out products valued at \$72,692,000, compared with products valued at \$161,203,000 turned out by 252 establishments in 1919. Of the 226 establishments reported in 1921, 164 were located in Massachusetts, 12 each in New York and Pennsylvania, 9 in Missouri, 8 in New Hampshire, 6 in Ohio, 4 in New Jersey, 3 in Illinois, 2 each in Michigan and Wisconsin, and one each in Connecticut, Kansas, Maryland and Virginia. Massachusetts, the leading State in the industry, in 1921, produced 55.5 per cent of the total value of the products of that year. The average

number of wage earners employed by the boot and shoe cut stock industry in 1921 was 7,084, compared with 9,715 in 1919. Salaries and wages paid in 1921 totaled \$10,061,000, compared with \$12,453,000 in 1919. Materials used in 1921 cost \$56,923,000, whereas the materials used in 1919 cost \$133,887,000.

As was the case with the trade of the United States, exports of leather boots and shoes from the United Kingdom showed a decided decline in 1921 and 1922 as compared with 1920. However the exports for the first 11 months of 1922 were very much larger than the exports for the corresponding period of 1921. The figures in dozens of pairs for the 11-months period of the three years mentioned are as follows: 1920, 777,713; 1921, 285,623; 1922, 446,661.

BOOTH, Mary Ann Allard, American microscopist; b. Longmeadow, Mass., 8 Sept. 1843; d. Springfield, Mass., 16 Sept. 1922. She was the daughter of Samuel Colton Booth and was educated at Wilbraham Academy, Mass., and by private tutors. She devoted many years to study with the microscope and made photomicrographs of germ-bearing fleas for stereopticon slides during the campaign against the bubonic plague in San Francisco in 1907-09. She travelled extensively to lecture in the United States and Canada and became one of the most noted women of science. She received medals and diplomas from the New Orleans, Saint Louis and San Francisco Expositions of 1885, 1904 and 1915. From 1905 to 1907 she edited *Practical Microscopy*. She was a member of various societies, including Royal Microscopical Society, London; Royal Photographic Society of Great Britain; American Microscopical Society; New York Microscopical Society; Photographers Association of America, and American Association for the Advancement of Science. Her home was in Springfield, Mass.

BORAH RESOLUTION. See PEACE AND ARBITRATION, INTERNATIONAL.

BORGLUM, Solon Hannibal, American sculptor; b. Ogden, Utah, 22 Dec. 1868; d. 31 Jan. 1922. He spent his youth in Fremont, Neb., and his early manhood on a cattle ranch. At the age of 24 he turned to art, spent two years with his brother Gutzon in California, and in 1895 entered the art school of Cincinnati. His first group, a 'Horse Pawing a Dead Companion,' won a special prize, and in 1897 he won a scholarship which took him to Paris. There he studied under Louis Rebisso and Frémiet. He achieved honorable mention with his 'Lame Horse' in the Salon of 1899, and attracted much attention by the originality of his subjects, taken from the life on the Western frontier, which he himself had experienced. His art has perpetuated vanishing types—the cowboy, the ranchman, Indian and the animals of the plains, with truth and inspiration and shows little French influence, even in technique. After 1900 he was active in New York. He became a member of the National Sculpture Society in 1901 and was made an associate of the National Academy in 1911. Among other awards he received a silver medal from the Pan-American Exposition of 1901, and a gold medal at Saint Louis in 1904. Among his principal works are 'On the Bor-

ders of White Man's Land' and 'Bulls Fighting' (Metropolitan Museum, New York); busts of C. A. Schieren, Simon Newcomb and the Packer Memorial (Brooklyn Institute Museum); equestrian statue of General Gordon (Atlanta, Ga.); 'Soldiers and Sailors' Monument (Danbury, Conn.); 'Stampede of Wild Horses' (Cincinnati Museum); 'The Last Roundup' (Metropolitan Museum, New York); 'Burial on the Plains'; 'Tamed'; 'Just Born'; 'Evening'; and 'The Bucking Broncho.' His later works include an equestrian statue of Captain O'Neill (Prescott, Ariz., 1907); portrait reliefs of Civil War generals in the Vicksburg National Park and 'Private Jones of the Confederate Army,' a bronze statue in Lynchburg, Va. During the World War he served in the Y. M. C. A. section with the French Army in 1918, and was awarded the Croix de Guerre for courage under fire. Later, he did educational work with the American Expeditionary Forces.

BORNEO. See BRITISH NORTH BORNEO.

BOSNIA AND HERZEGOVINA, former territories of Austria-Hungary, since 1918 a constituent part of the Kingdom of the Serbs, Croats and Slovenes (Jugoslavia). The area is 20,709 square miles with a population of 1,931,802. For production and industry see article on JUGOSLAVIA.

BOSTON COLLEGE, a Roman Catholic educational institution for men located at Newton, Mass. It was founded in 1863. In 1922-23 it had a faculty of 38 members, while the students enrolled numbered 883. The college property is valued at \$1,500,000. Income figures for the current year were not available. Rev. William Devlin, S.J., is president.

BOSTON UNIVERSITY, a non-sectarian coeducational institution, founded in 1869 and located at Boston, Mass. In 1922-23 it had a faculty of 367 members, a student enrollment of 8,906 (as of November 1922), property valued at \$5,644,135.25 and an income of \$1,293,616.67. Lemuel Herbert Murlin, LL.D., is president.

BOTANY. The past has shown that progress in agriculture and all of its related plant industries depends largely upon a preceding advance in our knowledge of the physiology of the plant tissues and the plant cell; the relation of the root system to the soil and its available plant foods and the relation of the growth of the plant to various external factors. Investigations, therefore, in the fields of pure physiology and ecology, whether undertaken with reference to some definite economic problem or whether from purely scientific standpoints, have all a most important bearing upon future progress in the agricultural sciences. In agriculture, medicine and the arts, there is a demand for more exact information regarding the functions of plant life, and a demand for a more careful survey of the plant life of all zones, especially the tropics, to find new and valuable plants and plant products.

Exploration.—Since the close of the World War there has been a notable increase in botanical explorations, chiefly in the American tropics. An account of the Mulford Biological Expedition to South America is given by Rusby in the

Journal of the New York Botanical Garden, and in the same journal Britton describes the results of the botanical explorations in Porto Rico, and the further exploration of Guatemala and Salvador is described by Standley; while several illustrated articles picture most vividly the recent explorations in tropical Florida by Small. An additional account of the botanical work of the Mulford Expedition is given by White in the July number of the *Brooklyn Botanic Garden Record*. Fernald, in *Rhodora*, gives an interesting account of the results of the recent Harvard Expedition to Nova Scotia. One of the most important of recent tropical explorations was the joint expedition sent out by the New York Botanical Garden, the Philadelphia Academy of Sciences and the United States National Museum to Colombia. Most of the collecting was done by Messrs. Pennell and Killip, who brought back over 7,000 numbers of plants, and Hazen, who secured in addition, over 200 photographs of plant life of that region. Medical science will be greatly benefited by the successful search in Cochinchina by Rock for the Chaulmoogra tree, which yields an oil believed to be the only cure for leprosy. An account of this search appears in the *National Geographical Magazine*.

Systematic Botany.—There appears to be few publications of outstanding merit during 1922 upon systematic botany but a large number of important papers of considerable local interest are to be found in various periodicals. There are some important contributions to the knowledge of the flora of the northeastern United States in *Rhodora* by Fernald, Weatherby, Blake, Wiegand and others. C. P. Piper's monograph of the genus *Lupinus* is continued in the *Bulletin of the Torrey Botanical Club* for July, and the belated report of the New York State Botanist (House) for 1919, contains matter relating chiefly to the flora of New York State. In the *North American Flora* (Vol. 33, pt. 1) begins the systematic treatment of the *Carduales* by Rydberg. A monograph of all of the known species of the *Isoetaceae*, a group of fern allies, by Pfeiffer, appears in the *Annals of the Missouri Botanical Garden*. The peltate species of *Peperomia* are treated by Trelease in the *Botanical Gazette* for February. Trelease has also published a second edition of *Plant Materials of Decorative Gardening*, which is a valuable guide to the cultivated woody plants of the Eastern United States, and their use in ornamental planting. Hitchcock has published in the *Contributions of the National Herbarium*, an account of the grasses of British Guiana. In the same publication, Maxon presents his seventh paper upon tropical American ferns, and Blake describes a number of new species from Guatemala and Honduras. In the *Journal of the Arnold Arboretum*, Schneider concludes his 'Notes on American Willows' by a systematic enumeration and key to the species and varieties, and Sargent reviews the 'First 50 Years of the Arnold Arboretum.' Holm's series of papers on the *Cyperaceae* is continued in the February and April numbers of the *American Journal of Sciences*. The botanical account of the Canadian Arctic Expedition of 1913-18 (pt. V), by Holm, contains most important con-

tributions to the morphology, synonymy and geographical distribution of the plants of Arctic America collected by this expedition.

Ecology and Phytogeography.—An interesting geological explanation of the coastal plain element in the flora of the Great Lakes by Peattie, appears in *Rhodora* for April and May; and Setchel, in *Rhodora* for January, gives additional information regarding Cape Cod in its relation to the marine flora of New England. The 10th paper on the phytogeography of the Rocky Mountains, by Rydberg, appears in the *Bulletin of the Torrey Botanical Club*. In the *Botanical Gazette* for March, W. B. MacDougal presents the results of extensive studies in symbiosis in a deciduous forest; in the February number, Woodard treats the subjects of sulphur as a factor in soil fertility, and in the September number, Waterman describes the development of plant communities of a sand ridge region in Michigan. The influence of certain soil factors on the growth of tree seedlings and wheat is discussed by Barrington Moore in *Ecology* for January, and he brings out the fact that the favorable influence of humus in the soil is largely due to its nitrogen content. Valuable additions to our knowledge of root systems is made by Weaver and Crist, in *Ecology* for July, by a study of the relation of hardpan to root-penetration in the Great Plains. Bews, investigating the flora of Southeastern Africa, discusses in *Annals of Botany* for April, the origin, migrations and evolutionary tendencies of the plant life of that region.

Genetics.—A study of the developmental selection in vascular plants by Buchholz, in the *Botanical Gazette* for April, adds valuable data to our knowledge of the causes of variation and mutations. Benedict makes an important contribution to the knowledge of the horticultural varieties of the Boston fern, in the *American Journal of Botany* for March, this being his second paper on genetic studies on *Nephrolepis*.

Physiology.—The distensive agencies in the growth of the cell, by D. T. MacDougal, in the *Proceedings of the Society for Experimental Biology and Medicine*, represents experimental work carried on for the past five years, and shows that substances known to accelerate or facilitate growth, also carry the hydration of living and dead cell masses and of pentosan protein colloidal masses to a point beyond that which may occur in pure water. All substances, not merely the protoplasm, which appear in the cell, must be taken into account in cell mechanics. The actual identity of living matter is not a question of structure but is one of intergraded actions, not one of equilibria but of energetics. Attempts to find separable membranes to protoplasts by dissection and ultramicroscopic methods have ended negatively. It has been possible to construct an artificial cell from which much of experimental value may be possible. In the *Journal of General Physiology*, additional and valuable papers upon direct and indirect determinations of permeability, by Osterhout; the penetration of cations into living cells, by Brooks, furnish further knowledge regarding the mechanics of cell life. A detailed study of the subject of respiration of plants is made by Irwin and Weinstein, and by E. P. Smith, in

the July number of the *American Journal of Botany*. Knudson, in the *Botanical Gazette* for January, studying the subject of nonsymbiotic germination of orchid seeds, concludes that the evidence for the necessity of a fungus for germination has not been conclusively proved, although under conditions of pure culture, germination of the seeds is dependent on the fungus. Doran, in the *Bulletin of the Torrey Botanical Club* for November, in a study of the effect of external and internal factors in the germination of fungus spores, determines among other facts, that the spores of the *Phycomycetes* can germinate at the lowest minimum temperatures, followed in order by the uredinospores, the aeciospores, and the teliospores of the *Uredinales*. Aeciospores have the lowest optimum temperatures for germination, followed in order by uredinospores, conidia of *Phycomycetes*, teliospores, and the spores of the *Imperfect Fungi*. The eighth and ninth papers of William Brown's 'Studies in the Physiology of Parasitism,' in the *Annals of Botany* for January and July, treat respectively of the exomosis of nutrient substances from the host tissue into the infection drop, and the effect on the germination of fungal spores of volatile substances arising from plant tissues, and in the April number Brown also presents a paper on the germination and growth of fungi at various temperatures. A first paper on the moisture relations of some terrestrial algae, by Fritsch, devoted to the report of some general experiments and observations, appears in the January number of the *Annals of Botany*.

Mycology.—An important recent contribution to mycology is a handbook to the larger British fungi by C. Rea, which will be of considerable value to American students. Saito, in the *Japanese Journal of Botany*, publishes a third paper upon the results of researches on atmospheric fungi. In German, has appeared the second edition of Lindau's 'Die Mikroskopischen Pilze,' 225 pages. In the *Annals of Mycology*, Sydow and Petrak contribute an important paper upon several new genera and species of fungi from the American Northwest. In American mycological literature, Krieger, in *Mycologia* gives a brief sketch of the history of mycological illustration in America, concluding that "compared with the output of Europe (it) is negligible." Murrill, in *Mycologia*, continues his monographs of the *Agaricaceae* by four papers devoted to the dark-spored genera. During the past 13 years, Murrill has described and illustrated, chiefly in colors, 249 species of fungi, and an index of the last 11 articles is given in the November number of *Mycologia*. In the *North American Flora* (Vol. 6, pt. 1), Seaver presents a systematic account of the North American species of the *Phyllostictaceae*, and in Vol. 7, pt. 7, Arthur continues the treatment of the North American *Uredinales*, in co-operation with Mains, Bisby and Jackson. Arthur has also a paper on new species of *Uredineae* in the July number of the *Torrey Botanical Club Bulletin*. A study of the known American species of the genus *Clavaria* is presented by Burt in the monographic form in the *Annals of the Missouri Botanical Garden*, and will serve as a guide for further studies and collections in this difficult group.

Plant Pathology.—The value of painstaking investigations into plant diseases and their control over wide areas is increasingly apparent in recent publications. Forest, field and garden crops represent in this country an enormous value, and the application of the most extensive and even costly measures of control is fully justified by the results to be obtained. The rapidly increasing population and its requirements of vast supplies of vegetable foods, is reflected in the great system of applied plant pathology represented by the many State experiment stations, the research work of the agricultural colleges, and of the Federal Department of Agriculture. It naturally follows that both by number of investigators and by published papers, plant pathology assumes a leading position in American botanical literature. Investigations upon rust diseases during the past year continue to lead in number and importance. In addition to purely systematic papers upon the *Uredinales*, mentioned under mycology, Hedgecock and Hunt, in *Mycologia*, discuss certain species of *Coleosporium*, rusts which have their aecial stage upon needles of pines, and other papers upon rusts by Jackson and by Fraser, also appear in *Mycologia*. Spaulding gives a summary of recent investigations upon the White Pine Blister rust, in the United States Department of Agriculture *Bulletin* 957, and Cooper, in *Ecology* for January, gives an account of the ecological life history of certain species of *Ribes* and its relation to the control of the White Pine Blister rust. Raines, in the *American Journal of Botany*, studying the vegetative vigor of the host as a factor influencing susceptibility and resistance to plant disease, with special reference to grain rusts, brings out the fact supporting the theory that lowered vitality does not favor infection and that the vegetative vigor of the host and the virulence of the disease may be in direct relation. Gardner and Kendrick, in the *Botanical Gazette*, present a study of the cause of overwintering of tomato mosaic, in which weed species of *Physalis* and *Solanum* are held largely responsible. The nature and distribution of the "take-all disease" of cereals and grasses, is treated by Kirby in *Phytopathology* for February, and ascribed by Fitzpatrick, in *Mycologia*, to the fungus *Ophiobolus cariceti* (Berk. & Br.) Sacc. The role of insects in the dissemination of plant diseases has long been recognized as important, and in *Phytopathology* for May, the result of past investigations is summarized by Rand, the systematic relations of carriers, by Ball, control problems, by Caesar, and the urgent problems of the future in this line of research, by Gardner. Mason, in the *Annals of Botany* for October, studying the growth and abscission in Sea Island cotton, gives a discussion of the external and internal factors which affect the shedding of bolls and flower-buds in Saint Vincent. The conclusion is drawn that the proportion of shedding over any given period was the result of two opposing factors, the rate at which food was synthesized by the plant, and the rate at which it was utilized in the maturation of the fruit, and that any check in the former caused either by weather conditions, fungus and bacterial disease or by insect depredations, caused the shed-

ding of the bolls, providing the injury was sufficiently pronounced to interrupt the translocation of food into the bolls. The additional literature upon all classes of plant disease and methods of control, by the many investigators in this field, is too extensive to be even briefly reviewed here. Most of this literature is found in the current numbers of *Phytopathology*, publications of the various agriculture experiment stations and of the United States Department of Agriculture, and these papers are carefully reviewed in the *Experiment Station Record*, published by the United States Department of Agriculture. In England, a textbook of 225 pages on the Ascomycetes, Ustilaginales and Uredinales, by Gwynne-Vaughn, is perhaps the outstanding contribution from that country, upon plant pathology during the past year, and will prove of value to American students, since in this country, in spite of the vast amount of valuable literature upon plant pathology, there is a paucity of practical or useful textbooks upon the subject.

Bibliography.—Britton and Brown, 'Illustrated Flora Northeastern United States'; Chamberlain, 'Methods in Plant Histology'; Coulter and Nelson, 'New Manual of Rocky Mountain Botany'; Gager, 'Heredity and Evolution in Plants'; Harshbarger, 'Textbook of Mycology and Plant Pathology'; 'Textbook of Pastoral and Agricultural Botany'; House, 'Wildflowers of New York'; Kelly, 'Some American Medical Botanists'; Livingston and Shreve, 'Distribution of Vegetation in the United States'; Murrill, 'Edible and Poisonous Mushrooms'; Oudemans, 'Enumeratio Systematica Fungorum' (2 vols.); Palladin-Livingston, 'Plant Physiology'; Rankin, 'Manual of Tree Diseases'; Rydberg, 'Flora of the Rocky Mountains and Adjacent Plain'; Small, 'Flora of the Southeastern United States'; Stevens, 'The Fungi Which Cause Plant Disease.'

HOMER D. HOUSE,
State Botanist, The University of the State of New York.

BOWDOIN COLLEGE, a non-sectarian educational institution for men, founded in 1794 and located at Brunswick, Maine. In 1922-23 it had a faculty of 36 members, 502 students, property valued at \$2,802,638.57 and an income of \$231,166.84. Kenneth Charles Morton Sills, LL.D., is president.

BOXING. See SPORTS.

BOY SCOUTS OF AMERICA, an organization similar to the Boy Scouts of Great Britain founded by Sir Baden Powell. Under the name of the Boy Scouts of America, the organization was founded 8 Feb. 1910, and it was incorporated by Act of Congress in June 1916. On 25 November the membership of the organization was 400,601 scouts and 126,396 scout leaders. A campaign was then on to increase the membership. On the same date veteran scout membership was 5,495, five-year men and boys, of which number 383 had been 10 or more years in the movement. Up to 1 November, 2,147 Life, 2,279 Star and 1,578 Eagle badges had been awarded. Awards made during the three years preceding were: In 1921, 2,667 Life, 2,598 Star and 1,306 Eagle badges;

in 1920, 1,610 Life, 1,667 Star and 629 Eagle badges; in 1919, 1,146 Life, 881 Star and 468 Eagle badges. On 1 Jan. 1922, a new uniform was adopted by the organization.

The 12th anniversary of the founding of the movement was celebrated in February, at which time 33 governors, numerous mayors and other public officials took the Boy Scout oath as part of the anniversary observance. During the Conference on the Limitation of Armament, which was held at Washington in the closing weeks of 1921 and the early weeks of 1922, the Boy Scouts of that city served as pages in the conference chamber. An international conference of Scout leaders was held at Paris 22-30 July. It was attended by James E. West, chief Scout executive of the American organization, and Sheldon Whitehouse, Charge d'Affaires, represented Ambassador Myron T. Herrick, a member of the executive board of the Boy Scouts of America. Other representatives of the American organization who attended the conference were Walter W. Head and Clarence M. Howard, members of the executive board, and Lorne W. Barclay, director of the department of education, in charge of Boy Scout camps in France which is conducted under the leadership of the American Committee for Devastated France. The annual meeting of the national council of the organization was held at Chicago 29-30 March.

Camping activities continued throughout the year and approximately 200,000 scouts took advantage of the summer camp privileges. An Indian village encampment was held at Springfield, Mass., in September in connection with the Eastern States Exposition. The second biennial conference of Scouts was held at Blue Ridge, N. C., 12-19 September. Among the foreign representatives present were Capt. Francis Gidney of England, M. Guerin Des Jardins of France and J. A. Stiles of Canada. The birthday of the late Colonel Roosevelt, 27 October, was nationally observed by the Boy Scouts of America, while the Scouts of Manhattan and vicinity participated in their third annual pilgrimage to Colonel Roosevelt's grave at Oyster Bay. The organization participated in the safety first, anti-fly and mosquito, fire prevention, tree planting, wild life conservation and other campaigns carried on during the year.

The officers on 1 Jan. 1923 were: Honorary president, Warren G. Harding; honorary vice-president, Woodrow Wilson; honorary vice-president, William H. Taft; honorary vice-president, William G. McAdoo; honorary vice-president, Daniel Carter Beard; president, Colin H. Livingston, Washington, D. C.; vice-president, Mortimer L. Schiff, New York, N. Y.; vice-president, Milton A. McRae, Detroit, Mich.; vice-president, Benjamin L. Dulaney, Bristol, Tenn.; vice-president, Arthur Letts, Los Angeles, Calif.; national scout commissioner, Daniel Carter Beard, Flushing, N. Y.; treasurer, George D. Pratt, Brooklyn, N. Y.; chief scout executive, James E. West, New York, N. Y.

BRADLEY, Alfred Eugene, American surgeon; b. Jamestown, N. Y., 25 Nov. 1864; d. Montgomery, Ala., 16 Dec. 1922. He took his medical degree at the Jefferson Medical College, Philadelphia, in 1887 and was appointed assistant surgeon in 1888. In 1898 he was major

brigade surgeon of volunteers and was honorably discharged in 1899. In 1902 he became major surgeon, United States Army, and major of the Medical Corps; in 1910 lieutenant-colonel; in 1916 colonel and in 1917 brigadier-general. His rank on retirement was that of colonel. He was military observer with the British on duty at the American Embassy, London in 1916-17 and on 8 June 1917 was appointed chief surgeon American Expeditionary Forces in France to organize medical services of the American forces abroad. He was fellow of the American College of Surgeons and a member of the American Medical Association and Association of Military Surgeons of the United States. Colonel Bradley was buried in the National Cemetery, Arlington, with military honors.

BRADLEY POLYTECHNIC INSTITUTE, a non-sectarian co-educational institution, founded in 1897 and located at Peoria, Ill. In 1922-23 it had a faculty of 81 members, 2,377 students, property valued at \$1,750,000 and an income of \$101,000. Theodore C. Burgess, Ph.D., is president.

BRANNER, John Casper, American geologist and university president: b. New Market, Tenn., 4 July 1850; d. Stanford University, Calif., 1 March 1922. He was graduated from Cornell University with the degree of B. S. in 1874 and in 1885 took his Ph.D. at the University of Indiana. The degree of LL.D. was conferred upon him by the University of Arkansas, Maryville College, and the University of California, and ScD. by the University of Chicago. Shortly after being graduated from Cornell, Doctor Branner went to Brazil and from 1875-77 was geologist of the Imperial Geological Commission of that country; from 1878-79 he was assistant engineer and interpreter of the S. Cyriaco Mining Company, Minas Geraes, Brazil; from 1880-81, special botanist in South America; from 1882-83, agent of the United States Department of Agriculture in Brazil. He then returned to America and from 1883-85 was topographical geologist of the geological survey of Pennsylvania. From 1885-92 he was professor of geology at Indiana University. He was also state geologist of Arkansas, 1887-93. In 1892, he was elected professor of geology at Leland Stanford Junior University and held this professorship until 1915, in the meantime serving as acting president of that institution from 1898-99, vice-president from 1899-1913, and president, 1913-15, having succeeded Dr. David Starr Jordan in the latter position. He was elected president emeritus 1 Jan. 1916. Doctor Branner was the director of the Branner-Agassiz Expedition to Brazil in 1899; a member of the California Earthquake Commission, 1906-07; special assistant to the Geological Survey of Brazil, 1907-08, and directed another scientific expedition to that country in 1911. He was a fellow of the Geological Society of America, serving as president thereof in 1904, and a member also of the Geological Society of London, Société Géologique de France, the National Academy of Sciences, and the Seismological Society of America. He was president of the latter in 1907 and was associate editor of the *Journal of Geology*. He wrote a number of

publications on Brazil, geology and physical geography.

BRAZIL, United States of, a federal republic of South America, consisting of 20 states, a federal district and one territory. The capital is Rio de Janeiro.

Area and Population.—The last census, that of 1920, gives the area and population of the states and territories as follows:

STATES AND TERRITORIES	Population September 1920	Area	Capital
Alagoas.....	990,278	22,577	Maceio
Amazonas.....	499,448	731,363	Manaos
Bahia.....	3,372,901	164,601	San Salvador
Ceara.....	1,436,309	40,241	Fortaleza
Espirito Santo.....	479,188	17,308	Victoria
Goyaz.....	528,879	288,462	Goyaz
Maranhao.....	853,050	177,515	St. Luis
Matto Grosso.....	274,138	532,210	Cuyaba
Minas Geraes.....	5,788,837	221,894	Bello Horizonte
Para.....	992,290	443,789	Belem
Parahyba.....	785,344	28,846	Parahyba
Parana.....	674,113	93,269	Curytiba
Pernambuco.....	1,975,441	49,560	Recife
Piauihy.....	548,250	116,494	Therezina
Rio de Janeiro.....	1,501,969	26,627	Nichtheroy
Rio Grande do Norte.....	552,071	22,189	Natal
Rio Grande do Sul.....	2,138,831	91,310	Porto Alegre
Santa Catharina.....	633,462	20,785	Florianopolis
Sao Paulo.....	4,823,100	112,278	Sao Paulo
Sergipe.....	535,094	15,089	Aracaju
Federal District.....	1,157,873	431	
Territory of Acre.....	104,430	58,672	
Total.....	30,645,296	3,275,510	

Rio de Janeiro, the present capital pending the erection of the new federal capital in the state of Goyaz, has a population of 1,157,873. Other large cities are: Sao Paulo, 504,300; Bahia, 348,130; Pernambuco, 216,484; Belem, 275,167; Porto Alegre, 150,343; Nichtheroy, 86,726; Manaos, 80,931; Fortaleza, 70,000; Maceio, 68,000; Saint Luiz, 57,709; Parahyba, 35,000. Immigration has increased notably in the last decade. In 1920, 71,206 immigrants were admitted, of whom 33,883 were Portuguese, 10,005 were Italians, 9,136 Spaniards and 4,120 Germans. Several boundary disputes with the neighboring republics were amicably settled by treaties in recent years.

Education.—Education is free but not compulsory except in certain municipalities which have enacted compulsory attendance laws. The latest reports give the number of elementary schools as 12,744 in all the states. Of these 85 are federal, 6,985 state and 2,647 municipal schools. In these schools there are 20,590 teachers and 700,120 pupils. There were 327 secondary schools with 30,000 pupils and professional schools to the number of 151 with 19,294 students. There are 30 training schools for teachers. Moreover, there are nine commercial institutions, 11 agricultural schools and 30 industrial schools. There are 12 faculties of law, one in each of the principal centres, also numerous medical and dental schools, three engineering schools and a mining school at Ouro Preto. There is a national university at Rio with 25 faculties. There are many public libraries. Education has made rapid strides since the opening years of the present century.

Religion.—Since the establishment of the republic there has been complete separation of church and state, but at the dissolution the state left all religious edifices and other property to the church together with their productive income. All forms of religion are placed on an equal footing and religious orders are permitted full freedom. Roman Catholicism is the religion of the nation, there being but about 100,000 non-Catholics in the entire country. At present there are five archbishops, one cardinal and 25 bishops. There are 13 seminaries for the training of the clergy.

Judiciary.—There is a supreme federal court in Rio de Janeiro and federal judges in each state. Judges are appointed for life. Justices of the peace and municipal judges with jurisdiction in limited degree are elected for four year terms. A new civil code went into effect in 1917.

Communications.—There are in the republic 17,847 miles of railways of which 9,455 miles are the property of the federal government, 1,527 are the property of the states and 6,231 the property of private owners. Of the federal mileage, 3,980 miles are operated by the government, the remainder being leased. The states of Sao Paulo and Minas Geraes have each over 4,000 miles of railways, Rio has 2,000 miles and Rio Grande do Sul about 1,800 miles. There were in 1922, 54,536 miles of telegraph lines under the control of the government. There are 252,318 miles of telephone line and over 20 wireless stations. The postal service is one of the best and most efficient in the western hemisphere. It is operated at a deficit, the yearly receipts being about \$7,000,000 and the expenditures about \$10,500,000. The merchant marine of Brazil consists of 643 vessels of 450,000 tons of which 588 are steam vessels of 433,000 tons. There is regular steamer service between Rio and New York and between Rio and Lisbon and Liverpool. The navigable inland waterways of the republic aggregate 40,300 miles.

Banking and Finance.—The Caixa de Conversao (Government Exchange Office) had on hand on 1 March 1921 gold to the value of 62,538,352 milreis. The currency unit is the real, but for practical purposes the milreis (1,000 reals or reis) is used. The milreis in 1920 was worth \$0.218 in American currency and \$0.25 in 1919. One thousand milreis is called a conto de reis. The gold milreis has about double the value of the paper milreis as given above. The federal revenue is mainly derived from import duties. On 10 August the President signed a bill fixing expenditures for the year 1922 at 85,931,211 gold milreis and 831,154,762 paper milreis. The totals of the budgeted receipts, as passed earlier in the year, were 92,276,320 gold milreis and 727,673,000 paper milreis. A comparison of the receipts and expenditures as budgeted gives a balance of 6,345,108 gold milreis and a deficit of 103,481,762 paper milreis. Conversion of the gold balance at the rate of 9d. gives 19,035,325 paper milreis, which reduces the paper deficit to 84,446,437 milreis. This deficit is only that shown in the budget tables. On 26 June the Brazilian Minister of Finance, Dr. Homero Baptista, sent the proposed national budget for

the year 1923 to Congress for consideration. The receipts were estimated at 106,586,320 gold milreis and 706,725,000 paper milreis. Of these 90,375,655 milreis are general receipts in gold, 16,210,665 milreis in gold are for special application, 650,215,920 paper milreis for general receipts, and 56,509,080 paper milreis for special application. (1 gold milreis=\$0.5462. On 24 July the paper milreis was quoted at \$0.135.)

The expenditures are estimated at 86,808,488 gold milreis and 771,793,386 paper milreis.

According to information made public in 1922 by the Minister of Transportation the value of railway and port properties owned by the federal government of Brazil is as follows:

	Milreis
Central do Brazil Railway.....	623,692,000
Noroeste do Brazil Railway.....	90,823,778
Oeste de Minas Railway.....	193,167,832
Therezopolis Railway.....	10,158,876
Madeira a Mamore Railway.....	59,157,768
S. Luiz a Therezina Railway.....	39,056,227
Basilio a Jaguarao Railway.....	4,041,808
Rio d'Ouro Railway.....	6,101,597
Sao Pedro a S. Luiz Railway.....	9,287,706
Sao Borja a Santiago branch.....	2,981,866
Sao Sebastiao a Sant' Anna Railway.....	4,587,334
Alegrete a Quarahy Railway.....	2,058,338
Tubarao a Ararangua Railway.....	4,603,616
Port of Rio de Janeiro.....	232,683,321
Properties of the port of Rio (material).....	6,486,543
Fiscalization of the Port.....	3,091,531
Total value.....	1,291,980,142

Agriculture and Forest Products.—Only a fraction of the arable area of the country has been brought under cultivation although this industry is fostered by the federal and state governments. Coffee is the chief crop of the country. It is grown chiefly in the states of Sao Paulo, Rio, Espirito Santo, and Minas Geraes, Sao Paulo being the chief, this state alone supplying over half of the world's supply. The average annual coffee crop is about 12,000,000 sacks of 132 lbs. each. In 1922, the crop was 8,030,000 sacks. Sugar, cotton, yerba mate, tobacco, rubber, cocoa, and nuts are also among the great products of Brazil. Rubber, of which this country furnishes one-half the world supply, comes chiefly from the districts of Manaos and Para. The yearly production of rubber is about 40,000 tons. The cotton crop is being augmented greatly in recent years, the yearly crop being at present about 110,000 tons. In the season 1922-23 it was estimated at 520,968 bales. Bahia and Espirito Santo are the chief producers of cocoa, the annual yield of which is about 65,000 tons. Bahia also produces the bulk of the tobacco crop, the annual yield of which is 54,000,000 kilos (kilo=2.04 pounds). The sugar crop in 1922 was 526,116 tons. Indian corn was grown to the extent of 5,000,000 tons. The livestock industry has received a great impetus of late years through the introduction of pure-breds. The census of 1920 showed 30,705,400 head of cattle, 18,399,000 swine, 10,633,000 sheep, 10,048,570 goats, 7,289,690 horses and 3,207,940 mules. The forest products of Brazil are among the world's greatest. The rubber output has already been dealt with in this article. The lumber industry is now being developed on a large scale. Pine is now an important article of export, about 200,000 tons being sent out of the country yearly.

Mining.—Several states have more or less

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extensive coal deposits, but the coal is of inferior quality. Gold is found but not in great bulk in any one district. There are several diamond mines, the output from which has become a factor in world trade. Of late years oil fields have been discovered and preparations are under way for the exploitation of these. Manganese exports in 1920 totaled 453,737,000 kilos. Monazite, mica, copper, talc, platinum, agate, and rock crystal are found also but in lesser quantities. Regarding the iron and steel industry important developments have taken place during the last year. The basis of this industry is the vast stores of high grade hematite and magnetite ore existing in the state of Minas Geraes and to a lesser degree in other states, including Sao Paulo and Parana. Competent geologists estimate that the total ore content of these fields is between 6,000,000,000 and 12,000,000,000 tons of hematite, a very large proportion of which runs over 60 per cent iron. This is exclusive of the lesser volume of magnetite ores. The chief obstacle to the exploitation of these resources is the lack of an adequate and proper fuel supply for smelting and reduction operations. Electric smelting of recent development has raised high hopes in Brazil where hydroelectric power is abundant but the imperfections of this method for the preliminary reduction of ore makes it doubtful if other fuel can be dispensed with. Another obstacle to the development of this industry is the distance from the seaboard of the ore fields. Moreover, the taxes levied by the several states on exports form a further impediment to the development of this industry.

Manufactures.—Cotton manufacture is the most important textile industry. In 1922 there were 242 cotton mills operating 1,521,300 spindles and giving employment to 108,960 workers. The output was valued at 442,000 milreis. There were 13 silk mills, 35 woolen and 18 jute mills in operation in 1922. Tobacco factories are numerous, there being 2,036 operating last year. There are 118 sugar mills and in the capital there are several flour mills. The total number of industrial establishments in the country is 11,335, capitalized at 665,676,000 milreis and producing goods to the value of 741,536,000 milreis.

Commerce and Trade.—Brazil's exports for the entire year 1922 were valued at 2,084,233,000 milreis and imports at 1,673,909,000 milreis. (Conversion at 7.72 milreis to the dollar—the average rate for the year.) This shows a visible favorable balance of trade of \$53,150,792 for the year. Exports of coffee during the year were valued at \$194,840,155, sugar at \$14,928,627, and cotton at \$13,427,850.

For the 11-month period ended 30 Nov. 1922, the volume of exports from Brazil increased by 175,994 metric tons, or 10 per cent, over the amount exported during the corresponding period in 1921, the total for the first 11 months of 1921 being 1,747,241 tons, as compared with 1,923,235 tons in the same period of 1922. Imports to the end of November 1922 were 2,988,735 metric tons, as against 2,336,481 tons during the first 11 months of 1921—an increase of 652,254 tons, or about 28 per cent. From these figures it will be seen that Brazil imported 1,065,500

tons more than it exported in the first 11 months of 1922, as against an unfavorable balance of 589,240 tons during the corresponding period of 1921.

Import statistics of the Brazilian Bureau of Commercial Statistics covering the first nine months of 1922, show that Great Britain was leading the United States by a little over \$5,000,000 in supplying Brazilian imports. The five leading countries in the Brazilian import trade for the period, with the value of their respective shares, were as follows: Great Britain, \$36,754,208; United States, \$31,736,565; Argentina, \$22,622,461; Germany, \$12,862,411; and France, \$8,711,161. The total value of Brazilian imports for the nine-month period was \$146,078,196. (Conversion at the rate of 7.484 milreis to the dollar—the average rate for the period.)

Government.—For constitution, federal government, etc., see article BRAZIL in 'The Americana.'

History.—During the year the government sponsored an organization for safeguarding the staple products of the republic at home and abroad. This organization is called the Institute for the Permanent Defense of the National Products and is a limited company under official patronage. Its aim is to protect home industries through loans to producers while holding their crops for a better market. Platinum was discovered in Parahyba do Norte and the exploitation of the mine was at once begun. Disturbances occurred in Maranhao and other states over the results of the April presidential elections, the returns of which were very close and caused the partisans of former President Nilo Pecanha to rise in protest when Doctor Bernardes was declared elected. Harmony was restored in June and all parties prepared for the celebration of the first centennial of national independence at the capital in September. Two Portuguese aviators received great demonstrations of welcome in the cities of Pernambuco and Rio over their completion of the crossing of the South Atlantic in April. After meeting disaster at the Sao Paulo Rock the trip was finished in a new plane, the landing being made safely at Pernambuco on 5 June. The congress decided the contest over the presidency in favor of Doctor Bernardes on 6 June. The centennial of Brazilian independence was celebrated with great eclat in September. Secretary of State Hughes headed the mission of the United States to attend the celebration and arrived at Rio on 6 September. On the 7th, the anniversary proper, the festivities began. President Pessoa reviewed some 40,000 troops and marines assembled from every state of the republic and from the visiting foreign contingents. Thirty-three nations were represented at the great three nations were represented at the great state dinner, 17 of which sent special ambassadors or envoys, the others being the regularly accredited diplomats at the Brazilian capital. Messages of congratulation were received from all parts of the world and Mexico made 7 September a national holiday in honor of Brazil. Though opened according to schedule the buildings of the exposition were far from complete. The United States building will later house the American Embassy to Brazil. Seventeen pavilions covered the exposition grounds. The character of the utter-

ances of the American Secretary of State made a very favorable impression on the public opinion of Brazil and on the eve of his departure the Secretary received a visit of a commission representing both houses of the Brazil Congress — an action not extended to the head of any other national mission to the centennial celebration. President Pessoa advised the Congress to enact a law forbidding the acquisition by aliens of land bordering on the frontiers of the republic, as such was deemed a source of national danger. In the autumn the Brazilian Ambassador to the United States made a contract with the American Secretary of State by the terms of which a commission of 17 American naval officers and about an equal number of chief petty officers went to Brazil in November to serve in the reorganization and building of the navy, the commission to remain in Brazil four years. Commander Vogelgesang headed the mission and on his arrival was made vice-admiral of the Brazilian navy. On 15 November President Pessoa was succeeded in the presidency by Senhor Arturo da Silva Bernardes.

Senhor Bernardes has had a remarkable career in Brazilian politics. He was in turn state deputy, federal deputy, secretary of finance of the state of Minas Geraes, and finally president of that state. He distinguished himself as an administrator, and at the 1919 election was chosen as president of the republic, but refused the post on the ground that he was under an obligation to fulfil his programme as head of the Minas Geraes government. Senhor Epitacio Pessoa was thereupon elected.

As president of Minas Geraes, Senhor Bernardes has been the prime mover in a vast number of state improvements, including the creation of schools, scientific institutes, sanatoria, and roads and railways. He has taken the lead in promoting the metallurgical industry, which is of paramount importance to the state. His greatest achievement has been in the direction of finance. He transformed the heavy state deficit into a considerable balance without increasing taxation. His term of office will last until 1926.

BREAD. See FOOD STANDARDS, FEDERAL.

BRENAU COLLEGE, a non-sectarian educational institution for women, founded in 1878 and located at Gainesville, Ga. In 1922-23 it had a faculty of 40 members, 457 students, property valued at \$400,000 and an income of \$233,000. Haywood J. Pearce, Ph.D., is president.

BRERETON, Austin, English journalist: b. Liverpool, England, 13 July 1862; d. Chipperfield, England, November 1922. He began his career as the writer of "Dramatis Personæ" in the *Observer*. At the age of 19 he settled in London, and for the next seven years he was on the staff of the *Stage* as dramatic critic. During that period he also edited *Dramatic Notes* (a journal of his own), and acted as assistant editor of the *Theatre* and other journals. Later he combined art with dramatic criticism, and contributed work of the latter kind to the *Sydney Morning Herald* from 1889-91. Two years later he became dramatic critic and assistant editor of the *Illustrated American* of New York, but continued that combined work for only about a

year. He was dramatic critic of the *Sphere* from 1901 to 1906. Three years later he became manager for H. B. Irving at the Shaftesbury and Queen's theatres, this work lasting till 1911. For many years he was secretary to Sir Henry Irving whose biography he wrote as well as that of H. B. Irving.

BRETHREN, Church of the. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

BRICK PRODUCTION. The manufacture of building brick boomed during 1922, as a result of the activity in building. The total consumption was very close to 1,250,000 thousand, the unit in enumerating brick being 1,000 of standard size. The manufacture was slightly less, as stocks were nearly exhausted at the end of the year. The product was divided into 552,383 thousand face brick (the largest figure recorded except in 1916), 131,490 thousand silica and 564,512 thousand clay firebrick. New York prices were \$17 at the beginning of the year, rising to \$20 in February, down to \$18 in April, \$20 in May, \$22 15 May, and \$24 during June, July and August, when demand was greatest. In September the figure was \$23, and shaded off gradually to \$18 at the close of the year. Boston, Philadelphia and Chicago prices took nearly the same course, but were somewhat lower.

BRIDGES. The bridge building of the country in the last few years has been confined mainly to small structures. The concrete bridge for highway crossing of creeks, and for elevating railway tracks above the level of traffic has taken a permanent place in construction and is seen more and more. There have been a few instances of fair-sized bridges being destroyed by freshets undermining the foundations of the arches, and this has led engineers to urge larger appropriations for bridges, permitting them to go down deeper and secure more solid bases. The notable bridges that characterized the industry 20 years ago are not being repeated, and the only large bridge now under way in the Eastern States is the Philadelphia-Camden bridge over the Delaware, which meets a long-felt want. This great bridge is slightly the largest steel wire suspension bridge yet constructed, being 1,750-foot span, with 400-foot towers. The first caisson sunk was 72 by 143 feet and 65 feet high. The supporting cables are 30 inches diameter, or 45 per cent thicker than those of the Manhattan Bridge. The cost when completed will be about \$30,000,000. The coming bridge over the Hudson at Anthony's Nose and Bear Mountain, above Peekskill, is to be of 1,650-foot span, rising 135 feet above the water, thus comparing with great bridges across the East River, New York. It is to be a wire cable suspension bridge, of much the same style as the Manhattan bridge, but owing to the high banks at this point the landings are on a level with the bridge centre. At Springfield, Mass., there was completed in 1922 a bridge over the Connecticut River, of a type that is destined to increased use. It has seven arches, the largest span being 176 feet and is of concrete with reinforcing arched rib supports that take the place of the wooden centring or false work formerly employed. The light steel arches are first posi-

tioned and the concrete built around them. The steel remains in place to strengthen the bridge. Another bridge of this type was built at Oregon City in 1922, with 360-foot arches. A novelty was the final coating of the bridge with concrete thrown on with a cement gun. At Chicago, where the bascule type of drawbridge is favored, two new bridges have been built within the past two years, that carry both surface and elevated tracks, yet which are opened for the passage of river traffic by swinging the two halves high in the air. On the Wells Street bridge, which is the largest, the great leaves weigh 2,500 tons each, plus 1,300 tons of counterweight. At Winnipeg, Canada, there was completed in December 1921 a large and most ornate concrete bridge, so designed that it appears to be of stone blocks. It has 240-foot arches, is 60 feet wide and carries four lines of tracks from Maryland Street. There has been designed an international suspension bridge to connect Detroit with Windsor, Canada. It is not yet under way, but if constructed will rival the Philadelphia bridge. For many years there has been talk of constructing a bridge across San Francisco Bay, between the city of that name and the three cities of Oakland, Alameda and Berkeley on the eastern shore of the bay. The bay at this point is about four miles wide and all traffic is carried on by means of the great ferries of the railroads. The four communities named above have a combined population of about 1,000,000 and are growing at the rate of 5 per cent yearly. There is a great daily movement of people and freight between the east and west shores of the bay, and the resultant congestion is very great, especially during the rush period. The land route is a trip of 100 miles around the shores of the bay. Two engineers requested to report upon the feasibility and probable cost of constructing the bridge early in the year submitted a scheme for a combination of mole, trestle, girder bridge and tunnel. They estimated the cost of this structure at \$40,000,000. In view of the expense involved there is little probability that the project will be carried further in the immediate future, though the engineers estimate that within five years after its completion the receipts from traffic would meet full interest charges on the capital cost of the undertaking. The location recommended is on a line beginning at any convenient point on the San Francisco side between Mission Rock and Potrero Point, running due east across the bay, crossing the site of the proposed naval base at Alameda and terminating at the bridge across Oakland Creek at the foot of Broadway, Oakland. Such a bridge would provide a route about 9.38 miles long between the city halls of San Francisco and Oakland, compared with an airline distance of 8.13 miles.

During the fall the War Department approved plans for the construction of a suspension bridge 3,000 feet long over Carquinez Straits, a narrow arm of water connecting San Pablo and Suisun bays, both estuaries of the northern end of San Francisco Bay. The bridge will cost approximately \$2,500,000. During the year the new North Hill Viaduct, bridging the "valley" in Akron, Ohio, was opened to traffic.

It is a half-mile concrete span and its construction had been hoped for for 20 years.

The most ambitious bridge project the East has ever known is the proposed bridge across the Hudson River from the centre of New York City, probably from the west end of 57th street, to Weehawken, N. J. It has been stated that the bridge, as planned, would be the most stupendous engineering task ever undertaken. The plans, drafted by Gustav Lindenthal, of New York, call for a single span reaching clear across the river without a single pier in between. According to Congressman Ernest R. Ackerman, of New Jersey, who is greatly interested in having the bridge built, eight streets on either side of the bridge will be required to handle the vehicular traffic, estimated at 25,000,000 annually by 1940, coming off this bridge with its 3,000-foot span 150 feet above the river. The steel towers, encased in an outside coat of masonry, will be 685 feet tall. Their base will be 200 by 400 feet. The upper deck will form a solid water-tight, fireproof roof over the lower decks, carrying 12 trunk line railroad tracks for use of heaviest types of railroad locomotives, in addition to subway and elevated railroad tracks. Sixteen lines of vehicular traffic will be provided for on this bridge. The bridge will contain more than 10 times the steel and masonry tonnage of the Quebec bridge, or 450,000 tons, and twice as much as all five East River bridges combined. Early in 1923 it was announced that the Tanana River bridge at Nenana, Alaska, a 700-foot single span, was virtually complete. Another ambitious bridge plan is that for spanning the Mersey at Liverpool, England.

BRIDGEWATER COLLEGE, a coeducational institution of the Church of the Brethren, founded in 1880 and located at Bridgewater, Va. In 1922-23 it had a faculty of 24 members, 216 students, property valued at \$540,000 and an income of \$75,000. Paul H. Bowman, M.A., D.D., is president.

BRITISH COLUMBIA, the only maritime province of Canada on the Pacific Ocean, bordered by Alaska, the State of Washington and the Province of Alberta. It has an area of 355,855 square miles and a population of 524,582 in 1921. The chief cities, with their populations, are as follows: Victoria, the capital, 38,727; Vancouver, the metropolis, 117,217; New Westminster, 14,495; Nanaimo, 9,088; Nelson, 5,230; Prince Rupert, 6,393. The government is administered by a Lieutenant-Governor appointed by the Governor-General at Ottawa, and a Legislative Assembly of 47 members, the latter elected for four years by adult suffrage.

Economic Conditions.—The British Columbia Department of Labor issued an exhaustive report in October 1922 covering the year 1921 and dealing comprehensively with all phases of the industrial situation in this province. The mass of data presented is compiled from figures submitted by 2,275 industrial concerns. During the slump many plants have been closed altogether, others have reduced staff and there have been drastic cuts in wages all around. The decline of the shipbuilding industry on this coast, which had an amazing record during the

war, is one illustration of changed conditions. At the peak of production in 1918 shipbuilding employed 9,980 men at very high wages. There was a steady decline, until in December 1921 only 589 men were so employed. The returns for July 1920 gave a total of 56,935 men employed by 1,869 firms. In January 1921 the 2,275 firms which made returns employed 42,111 men. Making allowances for firms which did not supply data to the department, the report says: "It is probably no exaggeration to say that the industrial employers of the province had 25,000 more men on their pay-rolls in July 1920 than they had in the following January, and 24,000 more than in December last." These figures explain to a large extent the unusually serious unemployment problem which had to be met in 1921-22. In a country of such diversified climate as Canada, there must always be a large number of men whose employment is of a seasonal nature, and on the Pacific Coast there is at all times a certain floating population of unemployed. Despite the somewhat gloomy tale these figures tell it is satisfactory to note that few of the established concerns in staple lines have been swept away by the depression. There have been considerable decreases in wages with the reopening of sawmills, logging and mining camps. In 1920, for instance, there were few logging or mining camps where the wages were less than \$5 a day, less board at approximately \$1.25 a day. In the latter part of 1921 many camps were paying from \$2.75 to \$3 a day with little or no decrease in the deduction for board. Striking a general average covering a large number of trades, the following figures are arrived at as the wages for a full week's work for adult male wage-earners: 1921, \$27.62; 1919-20, \$31.51; 1918-19, \$29.11; 1918 (January to July), \$27.97. See CANADA.

BRITISH EAST AFRICA. See KENYA COLONY.

BRITISH GUIANA, a colony of Great Britain situated on the northeast coast of South America and bounded on the north by the Atlantic Ocean, south by Brazil, east by the Dutch Guiana and west by the Republic of Venezuela. It has an area of 89,480 square miles and a population at the census of 1921 of 297,691. The capital, Georgetown, has a population of 53,422. Of the entire population in 1921 there were 124,546 East Indians. In the same year 224 schools received government assistance aggregating \$258,000. There were 35,037 pupils registered. The revenue of the colony is about \$4,000,000 yearly and the expenditures a similar amount. There are about 200,000 acres under cultivation. Sugarcane, rice and coconuts are the chief crops; but coffee, cacao, rubber and limes are also grown. The livestock industry is in a thriving condition. There are rich gold deposits, the output being valued at \$250,000 yearly. Diamonds valued at \$1,000,000 were recovered in 1920. There are large deposits of bauxite which at present are being appraised by the government geologists. Manganese, mica and oil are also believed to exist. The overseas trade of the colony amounts to about \$53,000,000 yearly and is about equally divided between imports and exports. The chief imports are ma-

chinery, fertilizers, textiles, flour and tobacco. The chief exports are sugar, rum, rice, diamonds, balata, charcoal and timber. The United Kingdom, the United States and Canada are the principal marts for the exports of Guiana and also supply about all the imports. The colony has 100 miles of railway of 4 ft. 8½ in. and 3 ft. 6 in. gauges. There are 75 post offices with 600 miles of telegraph lines. Georgetown and New Amsterdam have telephone systems. The Governor in 1922 was Sir Wilfred Collet. Consult 'Blue Book of British Guiana' (Annual).

BRITISH INDIA. See INDIA, BRITISH.

BRITISH NEW GUINEA. See NEW GUINEA.

BRITISH NORTH BORNEO, a territory consisting of the northern part of the island of Borneo which is under the jurisdiction of the British North Borneo Company. It has an area of 31,106 square miles and a population of 208,183. There are about 350 Europeans and 25,000 Chinese. There are Mohammedan settlers along the coast but the most numerous element is the natives who number about 175,000. The administration is vested in a Governor in Borneo and in a Court of Directors in London. Both Catholic and Protestant churches maintain missions in the region. A railway, 130 miles in length, runs from Jesselton on the coast to Melalap in the hinterland. There is little land under cultivation, the chief sources of commerce and revenue being the exploitation of the natural resources which consist of lumber, gums, rice, rubber, rattans, nutmegs, cinnamon, tobacco, coffee and coconuts. The revenue and expenditures of the territory approximate \$2,000,000 yearly and the external trade which is largely with Hong Kong and Singapore amounts to \$14,000,000 yearly and is about equally divided between imports and exports. The Governor in 1922 was A. C. Pearson.

BRITISH SOMALILAND. See SOMALILAND PROTECTORATE.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

BRITISH WEST AFRICA, included in this general term are the Colony and Protectorate of Nigeria; the Gambia Colony and Protectorate; the Gold Coast Colony and Sierra Leone (qq.v.).

BROADHURST, Sir Edward Tootal, English manufacturer and philanthropist: b. Manchester, England, 19 Aug. 1858; d. there in 1922. He was educated in Wimbledon and Winchester and in 1876 began his business career in the world of cotton. Under his control the Tootal Broadhurst Lee Company, Limited, became one of the greatest cotton-spinning concerns in England. He was also a director of the London and North-Western Railway, the Atlas Insurance Company and chairman of the Manchester and Liverpool District Bank. The city of Manchester and the whole of Lancashire felt the benefit of his energies, for he was public-spirited and gave largely to charities and institutions. His own firm had an educational system of its own with a director on education with special facilities and scholarships for its employees and a school and institute at Bolton.

His benefactions to the Manchester University were large, both individually and with his firm. He took a prominent part in war work, serving on the Cotton Control Board and under the Ministry of Reconstruction. The large sums of money he contributed to the help of people at home, as well as to the public interests, brought him a baronetcy in 1918. In celebration of peace he gave land for a park and playing-fields at Moston, a suburb of Manchester, valued at £35,000.

BROCK, Sir Thomas, English sculptor: b. Worcester, in 1847; d. London, 31 Aug. 1922. At the age of 19 he went to London and entered the studio of J. H. Foley, one of the leading sculptors of the day. The next year he entered the Royal Academy School and took a gold medal in sculpture, 'Hercules Strangling Antæus' (1869). On the death of Foley he was chosen to complete his unfinished statues—O'Connell and Lord Gough for Dublin and Lord Canning for Calcutta. Then followed half a century of strenuous work, which brought him many honors. He became K.C.B. in 1911. Oxford gave him the degree of D.C.L. He was a member of the Royal Academy; honorary member of the Royal Scottish Academy; honorary associate of the Royal Institute of British Architects, and honorary member of the Société des Artistes Français. Sir Thomas is best known by the 'Queen Victoria Memorial,' in front of Buckingham Palace, which he was commissioned to design in 1901. He was also responsible for the head of Queen Victoria on the 1897 coinage. His portrait statues were numerous; one of the earliest was 'Richard Baxter' (1870) for his native town, for which he made one of 'Rowland Hill' in 1882. His London statues are 'Robert Raikes' (1888) and 'Sir Bartle Frere' (1896). Thames Embankment; 'Sir Richard Owen' (1895), Natural History Museum; 'Gladstone' (1902), Westminster Hall; 'Lord Russell of Killowen' (1904), at the Law Courts; 'Gainsborough' (1906), Millbank; and 'Captain Cook' (1914), in the Mall. India has his 'Sir Richard Temple' and 'Lord Sydenham,' in Bombay; 'Brigadier-General John Nicholson,' in Delhi, and several native dignitaries. Two monumental effigies, 'Lord Leighton,' in Saint Paul's Cathedral, London, and 'Dr. Philpott,' in Worcester Cathedral, extended his fame greatly. His portrait busts are also numerous. The best known of these are 'Longfellow's' for the Poet's Corner, Westminster (1884); one of 'Queen Victoria' (1901), considered one of her best; the 'Marchioness of Westminster' (1881); 'Sir Richard Owen' (1892); 'Sir Henry Tate' (1901); 'King Edward VII' (1911); 'Lord Lister' (1913) for the College of Surgeons; and 'Edwin Abbey' (1917) for the British School at Rome. A colossal figure of the 'Black Prince' was erected at Leeds in 1902, and the Tate Gallery has his 'Moment of Peril,' an Indian warrior on horseback attacked by a serpent (1881); 'Eve' (1898), and 'The Genius of Poetry,' a youthful male figure (1889).

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. The Institute was founded

in 1824 and reincorporated in 1890. It comprises four departments: The Department of Education, Charles D. Atkins, director; the Department of Museums, William H. Fox, director; Department of Botanic Garden, C. Stuart Gager, director, and Department of Biological Laboratory, Charles B. Davenport, director. The educational department arranges addresses, lectures, courses of instruction and concert-tures, throughout the year by important men and eminent artists. Only small fees are charged for these opportunities. The School of Pedagogy is one of the well-known features of the Institute. There were 1,070 students in attendance under 24 instructors during the year 1922-23. The Brooklyn Museum conducts departments in art, ethnology and natural science which are among the finest in the world. There are 30,000 volumes and many pamphlets in its library. The Botanic Garden ranks with the best in the United States. In the four departments there was an enrollment of 10,696 toward the close of 1922, and students at the summer session of the Biological Laboratory numbered 82. Permanent funds of the Institute for the year amounted to \$1,430,395.01. Receipts available for current expenses were \$616,359.56. There were several bequests during 1922. By the will of Mrs. Georgietta H. Proctor, the Department of Education received \$61,000 for the work of its Department of Physics, and the general work of the Institute, \$10,000 by the will of Mrs. Caroline Mather Jackson. The Museum and Botanic Garden also received substantial gifts through the wills of the late A. Augustus Healy and Alfred T. White, both members of the board of trustees and already benefactors of the Institute. There is a branch of the Institute at Jamaica, L. I., with a membership of about 700. The president of the Institute and of the board of trustees is Frank L. Babbott. The headquarters are care of the Brooklyn Academy of Music, Lafayette Avenue, Brooklyn, N. Y.

CHARLES D. ATKINS,
Director, Department of Education.

BROOKLYN POLYTECHNIC INSTITUTE, a non-sectarian educational institution for men, founded in 1853 and located at Brooklyn, N. Y. In 1922-23 it had a faculty of 50 members, 427 day students, 790 evening students, property valued at \$1,363,383.19 and an income of \$241,617.32. Fred W. Atkinson, Ph.D., is president.

BROOM CORN. The 1922 broom corn crop of the United States, according to the final estimate of the Department of Agriculture, was 34,500 tons, valued at \$7,614,000, compared with the 1921 crop, 38,200 tons, valued at \$2,758,000, and the 1920 crop, 36,500 tons, valued at \$4,605,000. The total acreage planted in 1922 was 253,000, compared with 222,000 acres in 1921 and 275,500 acres in 1920. Oklahoma led all States in production with a total yield of 18,000 tons, compared with 23,000 tons in 1921 and 19,200 tons in 1920. Illinois came second with 7,100 tons, compared with 4,440 tons in 1921 and 5,000 tons in 1920.

BROOME, Isaac, American sculptor: b. Valcartier, Lower Canada, 16 May 1835; d. Trenton, N. J., 4 May 1922. He was educated

in Philadelphia and studied art at the Pennsylvania Academy of Fine Arts. After working on the Crawford statues for pediment of the Capitol at Washington and making the statue for W. W. Corcoran's mausoleum in Georgetown, D. C., in 1857, he went to Rome, opened a studio and made much sculpture. He also devoted his attention to art-tiles. In 1860 he returned to Philadelphia, having been elected academician of the Pennsylvania Academy of Fine Arts and the director of the life and antique department, which position he held for three years. A medal for ceramic arts was given to him at the Centennial Exhibition in 1876 and at the Paris Exposition in 1878, to which he had been sent as special commissioner on ceramics from the United States Government and State of New Jersey. Mr. Broome was director of many schools for teaching the fine and industrial arts and sciences; was active in educational, political and industrial reforms and lectured frequently on all these subjects. He was a member of the Ruskin Industrial Co-operative Association and Chautauqua lecturer on ceramic arts. He was also an inventor, originating the Broome Safety Wheel for Automobiles (1909), and the Perfected Rotary Press (1906-07). He was scientific and technical expert of the Lenox, Incorp. (ceramic art), Trenton, N. J. He contributed to magazines and newspapers and was author of 'The Brother' (1890) and 'Last Days of the Ruskin Co-operative Association' (1902).

BROWN, Elon Rouse, American political leader: b. Orleans, Jefferson County, N. Y., 7 Oct. 1857; d. Fox Island, near Watertown, N. Y., 24 Sept. 1922. He was graduated from Brown University in 1876, admitted to the bar and practiced at Watertown until 1920. In that year he opened a New York office and became counsel for a number of corporations. He was delegate to the Constitutional Convention of 1894 and elected to the State Senate in 1898. He served until 1904. He was again elected in 1912 and became majority leader in 1913. In 1915 he headed a legislative committee which made a study of the finances of New York City during the administration of the late Mayor John Purroy Mitchel. After retiring from the Legislature in 1919, he devoted himself to his law practice. Mr. Brown served as counsel in the prosecution of the Socialist Assemblymen who were unseated by the Legislature in 1920. One of his last undertakings was as counsel to the Meyer committee which, in 1921, investigated the administration of the government of New York City and was instrumental in bringing to light evidence tending to show exorbitant waste involved in the leasing and guarding of the city's piers. Mr. Brown had a remarkable memory for the details of legislation. He was an opponent of woman suffrage and of prohibition and made a particular study of finance and the financing of cities. As chairman of the legislative committee to investigate the finances of New York during his second service in the Senate, he acquired the knowledge that qualified him for counsel of the Meyer committee.

BROWN, John, English Congregational minister and author: b. Bolton, Lancashire,

England, 19 June 1830; d. London, 16 Jan. 1922. After a preliminary education in schools in Manchester, he was graduated at London University in 1853. He became a Congregational minister and in 1855 was minister of the Park Chapel, Manchester. From 1864 to 1903 he had charge of the Bunyan Church at Bedford. In 1891 he was chairman of the Congregational Union of England and Wales; in 1878 Congregational Union Lecturer, and in 1899 Lyman Beecher Lecturer at Yale University. His book on 'John Bunyan: His Life, Times and Work' (1885) attracted much attention. He also published 'Lectures on the Book of Revelation' (1866); 'God's Book for Man's Life' (1882); 'The Pilgrim Fathers of New England' (1895); 'Apostolic Succession in the Light of History and Fact' (1898); 'Puritan Preaching in England' (1900); 'From the Restoration to the Revolution' (1904); 'Commonwealth England' (1904); 'The English Puritans' (1910), and 'History of the English Bible' (1911). Yale bestowed on him the degree of D.D. in 1887.

BROWN UNIVERSITY, a non-sectarian educational institution, founded in 1764 and located at Providence, R. I. Both men and women are admitted but there are separate colleges for women. In 1922-23 the university had a faculty of 90 members, 1,250 men students, 420 women students, 130 graduate students and 1,425 students in the extension department. No information was given as to the value of the institution's property or its income. William H. P. Faunce, LL.D., is president.

BROWN-TAIL MOTH. See ENTOMOLOGY, UNITED STATES BUREAU OF.

BRYANT, Sophie, British educator: b. Dublin, 1850; d. near Chamonix, Switzerland, August 1922. She was the daughter of the Rev. Dr. W. A. Willock, who was conspicuous in the Irish national educational movement. After spending her childhood in County Fermanagh, taught by her father, she went to London and entered Bedford College with an Arnott scholarship. At 19 she was married to Dr. William Hicks Bryant of Plymouth, who died the following year. She then returned to her studies and became mathematical mistress of the North London Collegiate School for Girls. In 1881 she was graduated at London with mathematical and natural science honors and three years later was the first woman in the British Isles to receive the degree of doctor of science. In 1895 she became headmistress at North London, from which she retired in 1918. She was appointed to serve on the Royal Commission on Secondary Education in 1894; and in 1900 London University elected her to a seat on the senate, the first woman to be given such an appointment. She was active in educational affairs after her retirement and wrote books on the subject of teaching. She was an enthusiastic mountaineer and made the ascent of the Matterhorn twice. Dr. Bryant left her hotel at Montanvert on 15 August to join a party, which had started for Chamonix, and her body was found a fortnight later. She was much beloved for her high qualities of character and idealism as well as respected for her mental accomplishments.

BRYCE

BRYCE, (VISCOUNT) **James**, British historian and diplomat: b. Belfast, Ireland, 10 May 1838; d. Sidmouth, England, 22 Jan. 1922. His father was James Bryce, LL.D., a distinguished teacher and, for many years, headmaster of the high school, Glasgow, Scotland, who married Margaret, eldest daughter of James Young, of Abbeyville, County Antrim, Ireland. His grandfather, also named James Bryce, was born in Glasgow, but moved to the North of Ireland when still a young man. He was a minister of the Anti-Burgher Secession Church, and left his native city, it is said, under suspicion of entertaining too free opinions in theology. James Bryce, the third, received his preliminary education at the high school, under his father, and thereafter studied at the University of Glasgow. He next passed as a scholar to Trinity College, Oxford, where his career was a brilliant one and from which he was graduated with the degree of A.B. in 1862. The same year he was elected a Fellow of Oriel College, Oxford, and in 1863 he attended Heidelberg University. It was in 1862, when he was but 24 years of age, that he wrote his Arnold prize essay, 'The Holy Roman Empire,' which, when published in book form, became one of his best known works and passed through many editions. It has been extensively used as a textbook and has been translated into German, French and Italian. Before that, in 1859, he had published a volume entitled 'The Flora of the Island of Arran.' In 1867 Mr. Bryce was called to the bar by Lincoln's Inn and he practiced law until 1882. From 1870 until he resigned in 1893 he was Regius Professor of Civil Law at Oxford, one of the oldest scholastic chairs in Europe, having been established about 1546. In 1880 he was elected to Parliament as a Liberal for the Tower Hamlets Division. Up to that time he had been a leading personage at Oxford among academic Liberals. As a journalist he had criticised Lord Beaconsfield's administration, especially its foreign policy. Curiously enough his best work in this connection was done, not in English newspapers, but in the *New York Nation*, then edited by E. L. Godkin. At the general election in 1885 he did not again stand for the Tower Hamlets, but was elected for South Aberdeen and held the seat until 1907. When Lord Salisbury's Government fell at the beginning of 1886, Mr. Bryce was one of the new recruits taken in to fill the gaps in the short-lived Administration that followed, becoming Under-Secretary of State for Foreign Affairs. His opportunities for distinguishing himself, however, were not great for the reason that, at that time the Irish controversy, overshadowed all others. In fact it was a matter of considerable surprise that he had accepted a place in a Home Rule Government, or that, having accepted it, he did not, like Mr. Chamberlain, at once resign when the provisions of the Gladstone bill were disapproved. As did others, however, he rapidly learned to adapt himself to the transformed personality of his leader, and, after the Unionist victory at the general election, became a thorough-going, if somewhat elastic, adherent of Home Rule. When Gladstone formed his fourth administration in 1892 Mr. Bryce was appointed Chancellor of the Duchy of Lancaster

with a seat in the Cabinet; in 1894 he became President of the Board of Trade, a post held by him until the defeat of Lord Rosebery's ministry in January 1895. Just 10 years later, in 1905, he accepted the office of Chief Secretary for Ireland, and discharged the duties thereof until February 1907. He was perhaps the most popular holder of that position in its history, his only close rival being his immediate successor, Augustine Birrell. Meanwhile Mr. Bryce had traveled in South Africa shortly before the rupture with the Transvaal government and in 1897 published his 'Impressions of South Africa' in which he recognized frankly the difficulties between the Boers and the Uitlanders. He was a severe critic of the Anglo-Boer War, the peace terms and the resettlement. He strongly opposed also Mr. Chamberlain's fiscal views. Following his relinquishment of the Chief Secretaryship for Ireland in February, 1907, came his appointment as Ambassador to the United States. At the time he was no stranger to the American people. As far back as 1870 he visited the country and from that time on had been preaching the doctrine of closer friendship between the United States and the British Empire. Furthermore, in 1888, he had published his 'The American Commonwealth,' a monumental work, which was immediately recognized as a classic and the most authoritative book ever written upon the subject. At the time of his death it still held first place in America among the authoritative works on the country's government. Whether the belief that Mr. Bryce's appointment would be highly pleasing to the people of the United States was the primary consideration which actuated Sir Henry Campbell-Bannerman in commissioning him, it is certain that no Englishman, and perhaps no representative of any other foreign country, ever has been so hospitably received as was he when he first arrived at Washington. Furthermore, it is doubtful if any foreign representative or foreign man of letters has been able to so closely identify himself with the life of another nation as did Mr. Bryce during his official visit to America. Occasionally some of his own countrymen referred to him in sneering fashion as "the English Yankee," but the fact remains that he did more for the betterment of Anglo-American relations than any man, or, perhaps any group of men, of his time. When he received his appointment he was without previous diplomatic experience. Notwithstanding that handicap it was not long before he had won acknowledgment as a diplomatist of exceptional ability. Candor was the keynote of his diplomacy. Visitors found him ever willing to discuss freely and openly the international controversies that from time to time threatened the entente between America and Great Britain. In a speech delivered at Williamstown, Mass., in August 1921, one of the last made by him in the United States, he asserted that the world had suffered too much from "secret diplomacy" and predicted that the time would come when "trickery" would vanish from statecraft. Despite the fact that the reciprocity negotiations between the United States and Canada in 1911, with which he had had much to do, came to naught, and despite also the failure of the General Arbitra-

tion Treaty between Great Britain and the United States, with the complications over the Panama Canal tolls, his tenure of office at Washington was a conspicuous success. So much so, that upon his retirement in 1913 the expressions of regret were universal. Upon his return to England in 1914 (he made the trip back home by the Pacific route, traveling around the world) he was created first Viscount of Dechmont, County Lanark. He had refused an offer of a peerage in 1907 because, as he said, he preferred to come to the United States as "plain James Bryce." One of the tasks assigned to Mr. Bryce after the outbreak of the World War was the chairmanship of a commission on "Alleged German Outrages." After a thorough sifting of all of the charges, the commission filed a report holding, that in its opinion, the German army had committed innumerable violations of the laws of humanity in Belgium. One of the first speeches made by Mr. Bryce after his elevation to the peerage was delivered at Manchester, England, on the constitution of the second chamber (House of Lords)—a subject that was to occupy his attention later when in 1917 he was appointed chairman of the Second Chamber Conference by the Prime Minister. He filed his report in the spring of 1918, but at the time of his death the proposals of himself and his colleagues for the reform of the House of Lords had not been acted upon. To the cause of permanent international peace, Viscount Bryce gave the full support of his temperament and authority. Likewise he was an enthusiastic advocate of the League of Nations. His last visit to America was made in the summer of 1921 when he delivered a course of lectures before the Institute of Politics at Williams College, Williamstown, Mass. In a speech delivered in London the same year he referred to the Constitution of the United States as "the greatest single contribution ever made to government as an applied science" and in another part of the same address said: "Freedom in America, as elsewhere, has been at some moments abused, at others undermined or secretly filched away; but the pride in freedom and the trust in the saving and healing power of freedom have never failed her people, and have enabled them many a time to recover what they seemed to be losing. It is by these moral forces that nations live." Bryce, the scholar and diplomat, almost completely overshadowed Bryce, the mountain climber, and many who knew the distinguished Briton had no idea that he was the first person to scale Mount Ararat, a feat theretofore considered impossible, or that he was president of the Alpine Club from 1899 to 1901. He was also an excellent linguist, who spoke the principal European languages with ease, and was one of the most widely traveled men of his day. Another of his books, 'South America: Observations and Impressions,' published in 1912, was based on an extended visit to that country. His last book, 'Modern Democracies,' was published in 1921, when he was 83 years old, and was the fruit of many years of inquiry, travel, reflection and experience. In addition to the positions already mentioned as having been held by Viscount Bryce, he was appointed chairman of the Royal Commission on Secondary Education,

1894; member of the senate of London University, 1893; corresponding member of the Institute of France, 1891 (foreign member, 1904); foreign member of the Royal Academies of Turin and Brussels, 1896, of Naples, 1903, Saint Petersburg, and Stockholm; corresponding member of Società Romana di Storia Patria, 1885; member of Reale Accademia dei Lincei, Rome, 1904; one of the British members of the International Tribunal at the Hague; honorary Fellow of Trinity and Oriel Colleges, Oxford; honorary member of the faculty of law, University of Santiago; trustee of the National Portrait Gallery; and honorary fellow of the Royal Geographical Society. At one time he was president of the British Academy. The honorary degree of LL.D. was conferred on Mr. Bryce by the universities of Edinburgh, Glasgow, Michigan, Saint Andrews, Aberdeen, Jena, California, Leipzig, Buenos Aires, Adelaide, Brisbane and Belfast. The Royal Hungarian University of Budapest conferred upon him the degree of D.P.Sc. The degree of D.C.L. was conferred upon him by Trinity University, Toronto; Harvard University and Princeton University. The following universities conferred upon him the degree of Litt.D.; Victoria, Cambridge, Oxford, and Trinity College, Dublin. In addition to those already mentioned, his published works include: 'Report on the Condition of Education in Lancashire' (1867); 'The Trade Marks Registration Act, with Introduction and Notes on Trade Mark Law,' 'Transcaucasia and Ararat' (1877); 'Studies in History and Jurisprudence' (1901); 'Studies in Contemporary Biography' (1903); 'The Hindrances to Good Citizenship' (1909); 'University and Historical Addresses' (1913); and 'Essays and Addresses on War' (June 1918).

BRYN MAWR COLLEGE, a non-sectarian educational institution for women, incorporated in 1880 and located at Bryn Mawr, Pa. In 1922-23 it had a teaching staff of 61 members, and 463 students. The cost of the institution's buildings and grounds was given as \$1,815,037.88, in addition to which it has investments totaling \$5,596,435.56, par value. Its income for the year from investments amounted to \$229,128.25; tuition fees amounted to \$148,636.03, gross receipts from other sources amounted to \$330,638.62. Marion Edwards Park, Ph.D., is president.

BUBONIC PLAGUE. See PUBLIC HEALTH SERVICE, UNITED STATES.

BUCHTEL COLLEGE OF LIBERAL ARTS. See AKRON, MUNICIPAL UNIVERSITY OF.

BUCKNELL UNIVERSITY, co-educational institution, founded in 1846 and located at Lewisburg, Pa. Four-fifths of the trustees are Baptists. In 1922-23 it had a faculty of 50 members, 950 students, property valued at \$1,000,000. Figures not given as to income. Emory W. Hunt, D.D., LL.D., is president.

BUCKWHEAT. According to the final estimate of the United States Department of Agriculture, the 1922 buckwheat crop of the United States totaled 15,050,000 bushels valued at \$13,312,000, compared with 14,207,000 bushels valued at \$11,540,000 produced in 1921 and 13,142,000 bushels valued at \$16,863,000 produced in

1920. Pennsylvania led in production in 1922 with a total yield of 5,208,000 bushels. New York was second with 4,368,000 bushels and Minnesota was third with 1,050,000 bushels. The 1922 total acreage was 785,000 compared with 680,000 in 1921 and 701,000 in 1920.

BUDGET DEFICITS OF PRINCIPAL EUROPEAN COUNTRIES. See EUROPEAN COUNTRIES, BUDGET DEFICITS.

BUDGET, United States. See under UNITED STATES.

BUENA VISTA COLLEGE, a Presbyterian co-educational institution, founded in 1891 and located at Storm Lake, Iowa. In 1922-23 it had a faculty of 14 members, 148 students, and an income of \$35,000. Figures not given as to value of property. Dr. Arthur M. Boyd, D.D., is president.

BUFFALO. According to figures supplied by M. S. Garretson, secretary of the American Bison Society, there were in the United States at the close of the year 1922 a total of 3,654 buffaloes, and in Canada and the United States together a total of 11,964. The largest herd of buffalo in the United States is in the Yellowstone National Park and numbered at the close of 1922 600 head. There are 400 head in the herd on the Montana Bison Range and 200 head on the Wichita National Forest and Game Preserve in Oklahoma. Several years ago the Canadian Government established a game preserve of 162,000 square miles at Wainwright, Alberta. Into this 709 buffaloes were turned. In the spring of 1922 the caretakers reported having counted 6,146 buffaloes in this herd and it was anticipated that the calves dropped during the year would increase the herd by from 1,000 and 1,500 head. Besides the buffaloes at Wainwright, Canada also has a herd of 300 head at Elk Island Park and a wild herd on Peace River, estimated at anywhere from 600 to 2,000 head. There are other small herds scattered throughout the Dominion. In 1903 there were but 969 buffaloes in the United States. The increase has been due mainly to the efforts of the American Bison Society.

BUFFINGTON, Adelbert Rinaldo, American army officer: b. Wheeling, W. Va., 22 Nov. 1837; d. Madison, N. J., 10 July 1922. He was graduated from the United States Military Academy, 1861; was brevetted major in 1865, and was commander successively of the United States ordnance depot at Wheeling, W. Va., and of the arsenals in New York, Baton Rouge, Watertown, Mass., Watervliet, Indianapolis, Pittsburgh, Springfield, Mass., and Rock Island. In 1899 he was appointed Chief of Ordnance and was raised to the rank of brigadier-general; was retired in 1901. He invented depressing carriages for heavy guns, light steel artillery and shielded machine gun carriages, novel road and recoil brakes, magazine small arms and parts of small arms; of which all that were used by the United States government were given to it without cost. He was a life member of the Graduates' Association of the United States Military Academy, the Luther Burbank Society and the American Tract Society.

BUILDING. The high cost of materials together with the scarcity of labor almost paralyzed the building industry in the United States during the World War. The housing shortage was universal until it became to be estimated that building was some three years behind the normal demand for new structures. Because of the pressure for accommodations, this industry began to recover from its stagnation sooner than most others; and in the spring of 1921, a considerable increase in building permits was noted. This increase showed an almost steady progression and developed into a real boom in the spring of 1922.

At the end of that year, such authorities as the F. W. Dodge Company, S. W. Straus and Co. and the Copper and Brass Research Association agreed that all records for construction in the United States had been broken. By the Copper and Brass Research Association the total expenditures for building construction in the United States during 1922 was placed at \$4,910,000,000. In addition it was stated there were projected (but not built) other buildings of a total estimated cost of \$2,480,000,000. In other words, in 1922, there was developed, according to the authority mentioned, an actual building program of \$7,390,000,000. Apartment houses constructed during the year, according to the Copper and Brass Research Association, cost approximately \$950,000,000. The amount expended in the construction of churches was approximately \$205,000,000. Dwellings erected cost approximately \$680,000,000; hospitals, about \$230,000,000; hotels, \$640,000,000; industrial buildings, \$655,000,000; office buildings, \$645,000,000; public buildings, \$260,000,000; public garages, \$125,000,000, and schools, \$610,000,000. Despite the enormous amount of money spent during the year in the erection of dwellings, reports made to the National Association of Real Estate Boards indicated that the general housing shortage, which became so acute just after the close of the World War, still existed. One hundred and twenty-one cities out of 184 to which questionnaires were sent by the organization above mentioned reported housing shortages, while 53 reported no shortages and 10 reported only moderate shortages.

In its analysis of the building industry in 1922 the Dow Service Daily Bulletin Reports stated: "National construction touched a first quarter weekly average of \$49,033,000, a second quarter weekly average of \$81,478,000 and a third quarter weekly average of \$71,999,000. The October and November weekly average was \$59,925,000 with plan filings and permits granted in December indicating an average well above \$70,000,000. Contrasting the foregoing figures with the \$40,613,000 weekly average for 1919 and \$48,716,000 weekly average for 1920 and \$28,952,000 first quarter and \$53,130,000 second quarter and \$52,261,000 third quarter and the \$47,178,000 fourth quarter average for 1921, a graphic conception is at once obtained of the true scope of the biggest building era in history. Housing had a gigantic part to play in the accumulation of these totals which gave the building industry the first place in the national prosperity for the year just closed, overflowing into the 30 different industries allied with that of construction. It

represented the construction of 160,000 buildings of all kinds for 1922 as against 110,000 in 1921 and 80,000 in 1920, according to Babson's reports.⁹

While general costs in the building industry at the close of the year were estimated roughly at 25 per cent below the 1920 peak prices, they were then said to be advancing. The cost of building materials was reduced during 1921 and 1922. In April 1922 (and the situation was not materially different at the close of the year) it was 1.55 as compared with the standard of one for 1913. Thus measured, the leading materials in April were rated:

Brick.....	1.72	Pine flooring.....	1.80
Portland cement....	1.48	Window glass.....	1.54
Building sand.....	1.59	White lead.....	1.81
Reinforced bars.....	1.09	Hollow tile.....	1.88
Structural steel.....	.99	Lime.....	2.10
Hemlock (Chi.)....	1.57		

The wage workers in the building industries suffered general reductions, New York unions maintaining the highest figures. In Chicago Judge Landis was called on to arbitrate the wage concessions, and in February 1922, decided on figures representing about 20 per cent reduction for the men. The hourly wages in seven large cities are here given, for the spring of 1922.

	New York wage
Bricklayers.....	\$1 25
Carpenters.....	1 12½
Electrical workers.....	1 12½
Structural iron workers.....	1 12½
Painters.....	1 12½
Plasterers.....	1 25
Plumbers.....	1 12½
Sheet metal workers.....	1 12½
Concrete laborers.....	81½

WAGES IN SIX OTHER CITIES.

	High	Average	Low
Bricklayers.....	\$1 30	\$1 06	\$0 90
Carpenters.....	1 12½	1 04	95
Electrical workers.....	1 10	1 01	90
Structural iron workers.....	1 12½	1 00	90
Painters.....	1 25	96	80
Plasterers.....	1 25	1 08½	90
Plumbers.....	1 10	99	90
Sheet metal workers.....	1 10	97	90
Concrete laborers.....	72½	55	40

Of the money that went into wages for these new buildings, it is interesting to note the division. On average dwellings, spring of 1922, each \$100 paid for wages, was divided as follows:

	Frame dwelling	Brick dwelling
Carpenters.....	\$49 60	\$32 20
Bricklayers.....	6 20	21 50
Hod carriers.....	2 20	6 70
Plasterers.....	7 90	8 80
Plumbers.....	8 70	6 60
Electricians.....	2 60	2 50
Painters.....	10 00	6 30
Laborers.....	6 30	9 90
Others.....	6 50	4 50
	<u>\$100 00</u>	<u>\$100 00</u>

On this date common laborers on buildings are reported to have received as low as 30-40 cents in Akron, 25-30 in Raleigh, N. C., 30 in Baltimore, and 33-40 in Columbus and from 35-50 cents in Washington, Omaha and Louisville.

On 5 December, the Lockwood Committee, appointed by the Legislature of New York, succeeded in bringing about a permanent settlement of the controversy between the rival building laborers' unions, which threatened to embroil 125,000 building craftsmen and tie up construction in New York City. Thus was averted perhaps the most serious labor situation connected with the building industry in the United States in 1922. See also BUILDING AND HOUSING DIVISION OF THE DEPARTMENT OF COMMERCE.

BUILDING AND HOUSING DIVISION OF THE DEPARTMENT OF COMMERCE.

A division of the United States Department of Commerce, formed in July 1921, along general lines suggested in March by the Senate select committee on reconstruction and production, and following a survey of the housing problem and the needs of the construction industry, which was made, with the approval of President Harding, by Secretary Hoover and some of his assistants. The Division endeavors to keep in touch with current housing conditions and with the building situation, with the object of focusing attention on the basic facts and possible remedies for manifest ills. It has, therefore, obtained the assistance in its work of some of the most noted men connected with the construction industry, and has gained the co-operation of many national associations and professional societies in forming and carrying out its program. Furthermore, it has established contacts with different groups in the building industry in many cities, for it has been found that an efficient building industry and good housing depend mainly on the ability of each individual community to handle its own local problems. Construction costs can be materially reduced, for instance, in places where building operations are carried on more evenly throughout the year than is usual in American cities, and where corrupt practices have no foothold in the building industry.

The activities of the Division of Building and Housing in 1922 centered mainly along three lines: (1) statistics and economics; (2) technical service for municipalities; (3) elimination of waste within the construction industry.

1. Statistics and Economics.—The Division works closely with the Bureau of the Census in collecting and publishing statistics on building activities and on prices, production, consumption and stocks on hand of certain principal building materials. Some of these figures appear monthly in the Commerce Department's *Survey of Current Business*; others, such as prices paid for building materials at the place of consumption, are issued in mimeographed form; and still others in graphic charts that are reproduced by trade papers. The uncertainty in the building material market due to temporary fluctuations in prices and production is directly traceable to ignorance of the conditions of supply and demand. It has made accurate estimates of building costs practically impossible, and done much to upset the even course of building operations. Economic studies have been made of tenancy and home ownership, and the Division issues bulletins for the guidance of home buyers and home builders.

2. Technical Service for Municipalities.—

Most building operations are subject in some degree to State or municipal regulations, such as building codes, plumbing codes, housing ordinances, and zoning ordinances. It is universally agreed that such regulation would be far more effective, yet less burdensome, if there were greater consistency on certain points throughout the country and if centralized research were brought to bear on some specific problems.

Building Codes.—The advisory committee on building codes, composed of practicing engineers and architects, appointed by Secretary of Commerce Hoover to work on local building code problems, prepared and printed a 100-page report on 'Recommended Minimum Requirements for Small Dwelling Construction.' This report, wherever possible, is based on the results of experimental work at the Bureau of Standards (q.v.). The officials of over one hundred municipalities were consulted in compiling the first draft, which was subjected to the criticism of about 975 engineers, architects, municipal officials, and representatives of the building industry, before the final text was prepared. The committee consisted of: Ira H. Woolson, chairman, consulting engineer, National Board of Fire Underwriters, New York City; Edwin H. Brown, architect, Minneapolis, Minn.; William K. Hatt, professor of civil engineering, Purdue University; Rudolph P. Miller, former superintendent of buildings, New York City; John A. Newlin, United States Forest Products Laboratory, Madison, Wis.; Ernest J. Russell, architect, Saint Louis, Mo.; and Joseph R. Worcester, consulting engineer, Boston, Mass.

Plumbing Codes.—A special sub-committee on plumbing, composed of sanitary engineers and plumbing experts, issued a tentative report on code requirements for small house plumbing systems. At present some local codes require installations costing 20 per cent more than is required by good safe practice, and it has been difficult for manufacturers of plumbing fixtures to standardize their products on account of these varying requirements. It is hoped that the revised report, to be issued in 1923, will help to remedy this situation. This sub-committee consisted of: George C. Whipple, chairman, professor of sanitary engineering, Harvard University; Harry Y. Carson, research engineer, Birmingham, Ala.; William C. Groeniger, consulting engineer, Columbus, Ohio; Thomas F. Hanley, master plumber, Chicago, Ill.; A. E. Hansen, hydraulic and sanitary engineer, New York City; William J. Spencer, journeyman plumber, secretary-treasurer of building trades department, American Federation of Labor, Washington, D. C.; and Albert L. Webster, consulting engineer, New York City.

Zoning and City Planning.—The spread of zoning and city planning in American cities has been exceedingly rapid since 1916, and in some cities ill-considered schemes have been proposed. The advisory committee on zoning, appointed by Secretary Hoover, composed of distinguished specialists in city planning, real estate, housing, and municipal engineering has issued 'A Zoning Primer,' explaining the elements of zoning in popular style; 'Zoning: A Selected Bibliography'; and 'A Standard State Zoning

Enabling Act,' by the enactment of which States may authorize cities to zone. Work in connection with city planning is also under way. Misplaced construction and the scrapping of new and valuable buildings have been common in American cities as a result of undirected growth and it is the department's position that proper city planning and zoning can do much to avoid such wastes in the future. At the beginning of 1922, 55 cities and towns in the United States had zoning ordinances in effect, while over 100 had adopted such ordinances by the end of the year. In more than 150 cities organized efforts are being made to secure the adoption of zoning. The members of the advisory committee on zoning are: Edward M. Bassett, lawyer; counsel, Zoning Committee of New York, New York, N. Y.; Irving B. Hiett, realtor; ex-president, National Association of Real Estate Boards, Toledo, Ohio; John Ihlder, housing consultant; manager, Civic Development Department of the Chamber of Commerce of the United States, Washington, D. C.; Morris Knowles, consulting engineer, from the Chamber of Commerce of the United States; Pittsburgh, Pa.; Nelson P. Lewis, municipal engineer; National Conference on City Planning and National Municipal League, New York City; J. Horace McFarland, master printer and civic investigator, The American Civic Association, Harrisburg, Pa.; Frederick Law Olmsted, landscape architect; president, American Society of Landscape Architects, Brookline, Mass.; and Lawrence Veiller, housing expert; secretary and director, The National Housing Association, New York City.

3. Elimination of Waste.—The Division of Building and Housing is co-operating with the different elements of the construction industry in their efforts to eliminate waste and provide better housing at less cost. In addition to helping local groups that are endeavoring to eliminate seasonal unemployment, and effect other economies within the construction industry, the division is also making studies of the methods used by builders, and of the best building practice. Houses that are more economical to build and at the same time more livable can be produced through better house plans. In this matter the department of commerce is co-operating with the architects' small house service bureau, which is affiliated with the American Institute of Architects, and which, through its regional divisions, is issuing small house plans suited for the different climates and building materials in the United States. As a means of stimulating the public generally to take an interest in better living accommodations through the exhibits of modern well-furnished homes, the department co-operated in the Better Homes in America campaign, 9-14 Oct. 1922. Volunteer committees equipped and maintained demonstration homes in 961 communities throughout the country. Some of these houses were visited by as many as 20,000 persons.

Building Activity, Material Prices and Labor.—General building activity in 1922 exceeded that of any other year in the past decade. Record breaking residential construction in many cities has furnished the backbone of the revival in building. A record amount of

highway construction, encouraged by Federal aid, also contributed to the large total. The construction of business buildings was active, but that of industrial buildings amounted apparently to less than half of what it did in 1919.

In March, 1922, wholesale building material prices, as shown by the Department of Labor *Index*, reached a recent low level of 155, as compared with 100 in 1913, and advanced 19 per cent by the middle of November, when they stood at 185. The retail building material price index, computed by the Department of Commerce, stood at 168 in April, and had reached 196 in November.

Building trades labor was generally well employed. Wage increases exceeded the number of decreases reported, while some trades in a number of cities received premium wages at certain seasons.

Housing Conditions.—The construction activities of 1922 substantially met the demand for higher-priced houses in many cities, and for the country as a whole more than kept pace with the demand created by increasing population and the razing of old houses. The number of building permits for alterations remained high throughout the year, and the number of individual living accommodations was increased in some measure by means of sub-division and alteration of existing buildings. Rent decreases for higher priced accommodations were reported in New York and a number of other cities.

Relief to the lower income groups through abandonment of old houses for newer ones by the well-to-do does not seem to have been felt yet, and probably will not be felt until there is more building for the middle groups. As yet there are no definite developments in the building situation that promise an early and widespread alleviation of workmen's housing conditions. When the demand for other types of construction begins to slacken, it may be that the great potential demand for low-priced housing will enlist the efforts of the construction industry in bringing suitable living accommodations more nearly within the range of workmen's incomes.

It cannot be said that any revolutionary progress was made in dwelling construction, either in design or methods of construction, during 1922, but the field for such developments is rich, and is attracting the attention of many able men. It is reasonable to expect that continued application of organizing ability and of technical skill, such as was made during 1922, will bring substantial results.

One angle of approach is by local groups which seek to reduce building costs by elimination of corrupt practices, reduction of seasonal peaks in building activity, and in other ways requiring concerted action. In a number of cities, such as New York, Boston, Philadelphia and Portland, Ore., building congresses representing architects, contractors, engineers, material men, labor and other groups, have been organized to carry on such work.

From another side, the architects' small house service bureau, with eight regional bureaus formed out of 13 contemplated, has attracted the efforts of some of the foremost

architects of the country to the small house problem, with substantial results.

The movement for standardization of lumber grades and sizes, and elimination of excess dimensional varieties of windows, doors, mill work and other building material, should also help in keeping down building costs.

A shortage of skilled building trades workers is reported from different cities, and this is confirmed by the 1920 census of occupations. The fluctuations of building activity from year to year and the usual seasonal slumps, undoubtedly have helped discourage young men from learning the building trades, but the situation has aroused the attention of employers, trade unions and the public, and 1922 saw definite accomplishments in many cities throughout the country.

The research work carried on at universities and by different associations of building material producers is steadily making more economical construction possible. The modernization of building and plumbing codes, and the extension of city planning and zoning ordinances in American cities, mentioned above, should all have their effect.

JOHN M. GRIES,

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BUKOWINA, a former crownland of the empire of Austria-Hungary, which was annexed by Rumania after the fall of that empire in 1918. Bukowina has an area of 4,030 square miles and a population of 800,098. The population includes colonies of Germans and Ruthenians.

BULGARIA, a kingdom of the Balkans, the area of which as at present constituted is 40,656 square miles with a population of 4,861,439. As a result of the Great War Bulgaria lost her Aegean littoral, was compelled to cede Thrace to Greece and the Strumitza line and some territory on her northwest frontier to Serbia. However, the same treaty provided Bulgaria with an outlet to the Aegean. Sofia, the capital, has a population of 154,431. Other large populous centres are: Plovdiv, 63,418; Varna, 50,819; Ruschuk, 41,574; Sliven, 28,695; Plevna, 27,779; Stara Zagora, 25,491; and Choumen, 23,975. The reigning sovereign is Boris III, who succeeded to the throne on the abdication of his father on 3 Oct. 1918.

Religion.—The religious faith of Bulgaria is the Greek Orthodox which since 1870 has been independent of the patriarchate of Constantinople. The ruling body in the church is the synod of bishops. The clergy of all denominations are paid by the state.

Agriculture.—This industry is the main occupation of the people. The land is held in freehold by very many small proprietors, numbers of whom have but five acres or less. About 9,000,000 acres are under cultivation, of which one-fourth is planted to wheat and about 1,500,000 acres to Indian corn. Rye, barley and oats occupy about 500,000 acres each. There are extensive vineyards which yield 10,000,000 gallons of wine in normal years. Tobacco, cotton and sericulture are also crops of importance. The tobacco crop of 1922 amounted to only 18,000 tons—the smallest in four years. The quality, however, was excellent. The last livestock cen-

sus showed 1,900,000 cattle, 925,000 goats and 7,500,000 sheep.

Education.—Education is free and compulsory for children between the ages of 7 and 14. The 'Statesman's Year-Book' gives the following statistics relative to the state schools for the year 1919-20:

SCHOOLS	Number	Teachers		Registration	
		Male	Female	Male	Female
Elementary					
State.....	3,601	5,141	5,675	290,890	214,394
Private.....	1,382	1,686	157	37,654	29,227
Gymnasia					
State.....	396	1,010	1,607	52,857	23,352
Private.....	35	97	28	1,379	585
Incomplete gymnasia					
State.....	33	270	283	9,838	7,079
Private.....	9	10	16	584	448
Complete gymnasia					
State.....	47	852	457	18,146	11,831
Private.....	3	10	20	126	357

In addition there are 36 special schools with an attendance of 7,000. There is a national university at Sofia for higher education. About 35 per cent of the populace are illiterate.

Other Industries.—State aid is granted to several industries. About 485 factories receive this subsidy and nearly one-half of these are engaged in the production or preparation of food-stuffs. Mining of coal is a major industry. The state coal mines produce 700,000 tons yearly or 85 per cent of the total output of the country. Copper, gold, lead, manganese and silver are mined in paying quantities.

Commerce and Trade.—The foreign trade of Bulgaria was \$770,000,000 in 1920, with imports slightly in excess over exports. The foreign trade declined the following year and in 1922 it was but a little over \$300,000,000. Italy, Turkey and the United Kingdom furnish most of the imports, while the United States, Germany, Austria and France are large takers of the exports. Textiles, metals and oils are the chief imports and tobacco, otto of roses and corn the chief exports.

Banking and Finance.—The National Bank of Bulgaria has a capital of 100,000,000 leva, and issues both gold and silver notes. The Postal Savings Bank had on deposit in 1922, 287,000,000 leva. The debt of Bulgaria is as follows: A foreign debt of 3,209,035,000 francs and 24,967,000,000 leva; and an internal debt of 3,947,155,578 leva. The budget for 1922 estimated revenues at \$18,501,000 and disbursements totaling \$17,737,000. On 31 Aug. 1922 the bank-note circulation amounted to 3,874,472,019 leva, an increase of 612,414,000 leva since 31 Aug. 1921. This total circulation is appreciably less, in terms of gold value, than the total gold, silver and paper circulation in 1911, the last normal year in Bulgaria. The floating debt of the government to the National Bank of Bulgaria on 31 Aug. 1922 was 3,947,155,578 leva, an increase of 765,492,000 leva over 31 Aug. 1921. The increase in the floating debt during these 12 months is greater than that in the bank-note circulation by 153,078,000

leva. The leva rose from \$0.00638 on 13 October to approximately \$0.00679 on 8 November, having been as high as \$0.007 on 30 October and 2 November. This improvement may have been induced, partially by the scarcity of money. Little foreign trade was expected in view of the generally disturbed conditions in the Near East, although in Bulgaria the effect was that of optimism. Exports to the United States dropped from \$862,892 (mainly tobacco) in June to the insignificant figure of \$8,701 in July, while imports from the United States showed an increase from \$29,861 to \$42,919.

History.—At the beginning of the year diplomatic relations were resumed with Yugoslavia after long bickering over certain provisions of the Treaty of Neuilly. The deposed ruler, Ferdinand, is forever barred from entering the country, but two of the sisters of the present King, Boris, have been permitted to return to Sofia. The action of the government in imposing burdensome taxation upon foreign corporations was vigorously protested by the Diplomatic Corps. A treaty was concluded with the United States in order to safeguard American interests in view of the many reparations claims against Bulgaria, resulting from the treaty of peace. This treaty was really the after-war settlement with America and equaled a treaty of peace but for the fact that the two countries had not been formally at war. A Greek commission arrived in the country for the purpose of taking over from the Bulgar authorities those archaeological objects seized by the latter in Greek territory during the war and ordered returned by the terms of the peace. A conflict arose between the National University and the Minister of Education over the latter's decree abolishing three letters of the Bulgar alphabet. At the general election held in spring, the Agrarian party scored a substantial victory, winning over 13,000 municipal council seats out of a total of 26,000 seats, the balance going to the Bourgeois and Communist parties. The Reparations Commission exacted a payment of 10,000,000 gold francs before 30 April and another of 30,000,000 to be paid next year.

Great excitement prevailed at the capital when, on 11 March a bomb was exploded in the building of the American Legation. At first it was believed that the outrage was due to Soviet sympathizers, but investigation showed that it was the work of some irresponsible person and was devoid of political significance. The Bulgarian government offered a reward of 50,000 levas for the apprehension of the perpetrator. In May complaint was made by American business men in Bulgaria that the Allied Reparations Commission, made up of British, French and Italians, was discriminating against American business firms and goods. This was a serious matter since the Commission has control of all government expenditure. Anarchists threatened to destroy the American Legation at Sofia unless two labor radicals imprisoned in Massachusetts were released. The economic mismanagement of the Agrarian party government and the failure to secure the promised outlet to the Aegean Sea brought about a situation of complete exhaustion of a potentially rich country and an inability to pay the reparations demanded by the

Treaty of Neuilly. For a time there was danger of a peasant dictatorship under the lead of Premier Stambolisky. The government's anti-bourgeois policy was approved by the congress of the Peasant party, which met at Sofia on 28 May 1922. The congress protested at the proposals of the Reparations Commission to take over the control of the mines, forests and customs revenues. It was seen, however, that these proposals would have to be accepted and the congress adjourned without putting its threatened policies into operation. The burden of the indemnity was increased 13 fold by the depreciated exchange. The indemnity was fixed at 2,250,000,000 gold francs. The first anniversary of the Conscription Labor Law was observed on 13 July. For a certain period of every year all men from 20 to 50 years are liable to take part in public work, and women from 16 to 50 years of age. Thirty thousand workers were conscripted the first year and the budget for these workers showed a profit of over 5,000,000 leva. The government in July banished several of the officers of General Wrangel's Russian army from the country because of the alleged discovery of documents implicating these officers in a plot against the government. Throughout the year the trial of the 12 members of the Radoslavoff war cabinet dragged on. Finally after a session of over 11 months the matter was left to a popular referendum on the guilt or innocence of the accused men to be held on 12 November. A 70 per cent vote of guilty would result in life imprisonment for the accused ministers and a vote of 60 per cent guilty in 10 years' imprisonment, while a 50 per cent vote of guilty would bring a sentence of exile for 10 years. On 5 October it was announced that Bulgaria would remain neutral in the Near East controversy under all circumstances. The deadlock between the government and the Reparations Commission continued to the end of the year, the former claiming that the control over the government revenue sources involved an interference with the sovereignty of the nation.

BULKELEY, Morgan Gardner, American public official and insurance company president: b. East Haddam, Conn., 26 Dec. 1837; d. Hartford, Conn., 6 Nov. 1922. At the age of 15 he entered a mercantile house in Brooklyn, N. Y., and in a few years became a partner in it. When the Civil War broke out he went to the front as a private in the 13th New York regiment and served during the McClellan-Peninsula campaign under General Mansfield at Suffolk, Va. In 1872 he went to Hartford, organized and became president of the United States Bank in that city, and later (1879) was elected president of the Aetna Life Insurance Company, a position he held until his death. For over 30 years he was a prominent figure in local and State politics. He was four times elected mayor of Hartford (1880-88), and in 1889 was elected Governor. At the State election in November 1890, the first gubernatorial election under the new secret ballot law, the Democratic ticket received a considerable plurality over the Republican, but a majority being necessary to elect, there was some doubt whether there had been a choice by the people for Governor or Treasurer. Ac-

cordingly the matter went before the General Assembly, which met in January 1891, and in which the Republicans had a majority of four on joint ballot, the Senate being Democratic. A long contest ensued between the two houses, the Senate claiming the election of the recent Democratic candidates and refusing to recognize in any manner Governor Bulkeley and the other hold-over Republican officials. The matter was finally settled on 5 Jan. 1892, when the State Supreme Court, in the *quo warranto* suit brought against Governor Bulkeley by the Democratic candidate for Governor, found "Morgan G. Bulkeley to be Governor, both *de facto* and *de jure*," and his right to hold over till both houses of the General Assembly should unite in declaring the election of his successor was affirmed. As the two houses could not agree, the Governor remained in office for another full term. In November 1892 the Democratic ticket swept the State. He was United States Senator from 1905 to 1911. He received the honorary degree of A.M. from Yale University in 1889, and the degree of LL.D. from Trinity College in 1917. He was a delegate to the Republican National Conventions of 1888 and 1896; was a member of the Grand Army of the Republic (department commander of Connecticut), a member of the Massachusetts Commandery, Loyal Legion, the Connecticut Society, the Cincinnati Society, the Baronial Order of Runnymede, Mayflower Society, etc.

BÜLOW, Karl von, German field-marshal: b. Berlin, 24 March 1846; d. there, 31 Aug. 1921. As one of Germany's high military officials, Marshal von Bülow at the outbreak of the World War was given command of the German Second Army, which invaded Belgium. On 7 Aug. 1914 he occupied Liège and then advanced to the Marne. During the retreat from the Marne and at the battles of the Aisne, he commanded the First and Seventh Armies, and by many, was held responsible for the failure of the German effort to take Paris. He was raised to the rank of field-marshal on 27 Jan. 1915, the fifty-sixth anniversary of the birth of the former Kaiser Wilhelm II. At his own request he was placed on the retired list in June 1916. Marshal von Bülow's military career began in 1864, when he joined the Second Guards regiment of infantry. He achieved distinction at Königgrätz in 1866. He served through the Franco-Prussian War of 1870 and won the Iron Cross of the second class. He served as a staff officer for a number of years and in 1894 was promoted to colonel of the Fourth Guards regiment. In 1897, he was made a major-general and transferred to the War Office. He was made a lieutenant-general in 1900 and in 1901 was promoted to general, commanding the Guards division. He attained the rank of *generaloberst* in 1912.

BUNDY, Edgar, English painter: b. in 1862; died in London, England, 1922. He was chiefly known as a painter of subjects and historical pictures permeated by a spirit of patriotism and romance. Many of his works are inspired by historical events on the sea. He was only nineteen when his 'Simon Tappertit' (a character in Dickens's 'Barnaby Rudge') was accepted by the Royal Academy. Thereafter he

was a yearly contributor. Among his works are 'The Saucy Arethusa,' 'A Witch,' 'Puritans,' 'Watercress,' 'The Discovery of Grinling Gibbons by John Evelyn, January, 1671,' 'Two Years Old To-Day,' 'A Country Cousin,' 'From Southern Seas,' 'The Spanish Yoke' and 'Finance.' The latter, exhibited at the Academy in 1913, because of its introduction of Jewish characters aroused indignation in the Jewish community in London and a protest was made to the Royal Academy; but Mr. Bundy disclaimed the idea that he was actuated by any anti-Semitic feeling. He was also a capable portrait painter.

BURIAN VON RAJECZ, **Baron Stefan**, Austro-Hungarian diplomat and statesman of Slovak extraction: b. near Pressburg, Hungary, 15 Jan. 1851; d. 20 Oct. 1922. He served in various consular capacities at Alexandria, Bucharest, Belgrade, Sofia and Stuttgart, as Austro-Hungarian Consul-General at Moscow, and as Ambassador to Greece, where he became conversant with the intricacies of Balkan politics. For a time he was Finance Minister of the Dual Monarchy, and succeeded von Kallay in 1903 as chief administrator of Bosnia-Herzegovina. When Count Berchtold resigned as Austro-Hungarian Foreign Minister, in 1915, Burian succeeded him. His appointment at this critical time was interpreted as a desire for important political changes. The World War had been precipitated by the policy of Berchtold, who was now occupied arguing with Italy the latter's territorial demands. Contrary to his convictions, at the instigation of Germany, he finally agreed to the cession of practically all Italian-speaking Austria. Nevertheless, negotiations failed because of Italy's insistence that the transfer should be made at once, and Italy declared war on Austria 23 May 1915. In negotiating the Bulgarian and Turkish alliances with Austria, Burian performed signal service. Regarding the demands of Rumania he was, politically speaking, decidedly apathetic. He strongly opposed Germany in the matter of the Polish problem, and just as strongly favored an Austro-Polish solution. It is typical of his relations with Germany that he considered the latter as ever refusing to practice the policy of partnership which theoretically existed between the two countries. Burian and the political and military leaders of Germany differed still more acutely over the question of peace with the Entente Allies. Burian strongly opposed the possible loss of any southern Austro-Hungarian territory. He went so far as to urge (1915-16) Germany to guarantee Belgian independence, and to give up all idea of western conquests. Serious friction between the German and Austro-Hungarian cabinets resulted. The quarrel was ended by Burian's peace note, dated 12 Dec. 1916, which also constituted his final official important act. Very shortly afterward he gave up his duties and was succeeded by Count Czernin. When the latter resigned, 14 April 1918, Burian was recalled by Emperor Charles. Again, in his official capacity, he strongly antagonized Germany in bending every effort toward the conclusion of a permanent peace. Germany held off until after their great offensive had failed, August 1918, before they would consent even to the principle of an agreed peace. When negotiations

finally were taken up, they proved ineffectual on account of fundamental differences, regarding essentials between the Entente Allies and the Quadruple Alliance. The gap between Burian and the German leaders was still further widened when the former consistently with his previous policy, and in spite of German veto, officially suggested to the belligerent nations (14 Sept. 1918), that negotiations toward a conclusion of hostilities be conducted. The Entente Allies vigorously rejected this proposal, and united in one final victorious drive which crushed all semblance of opposition and paved the way toward the conclusion of separate peace treaties. Burian gave up his office while the clouds still hung heavy over the Austro-Hungarian horizon.

BURLAP. Importations of burlap into the United States during 1922 amounted to a total of 962,000,000 yards compared with imports of 859,000,000 yards in 1921 and the record-breaking total of 1,011,000,000 yards in 1920. Advices received from Calcutta, the great burlap market of the world, early in January 1923, fixed the price of standard lightweight goods at 7.60 cents and the price of standard heavy burlaps at 9.25 cents.

BURLINGAME, **Edward Livermore**, American editor: b. Boston, Mass., 30 May 1848; d. New York City, 15 Nov. 1922. His father, Anson Burlingame, was appointed Minister to China by President Lincoln and took him to Peking as his private secretary. Consequently he left Harvard before graduation, but Harvard in 1901 gave him his M.A. He won a Ph.D. in Heidelberg in 1869. Returning to America he joined the staff of the *New York Tribune*. Subsequently he was on the staff of Appleton's 'American Encyclopedia.' In 1879 he became connected with the publishing firm of Scribner's and in 1884 was made editor of *Scribner's Magazine* revived after several years. He held this position until 1914 when he resigned, but remained with Charles Scribner's Sons as general literary adviser. Columbia made him an LL.D. in 1914.

BURMA, the easternmost province of British India. It has an area of 230,839 square miles and a population of 13,205,564 in 1921. There are several racial groups but the Burman comprises about 9,000,000. Agriculture is the chief occupation of the inhabitants. Rice is extensively grown and is the chief article of export. There are also extensive forests and the export of cabinet woods is important. Cotton is grown and exported. Rangoon and Mandalay are the chief cities respectively of Lower and Upper Burma. The lieutenant-governor in 1922 was Sir R. H. Craddock.

BURTON, **Ernest DeWitt**, American educator and theologian: b. Granville, Ohio, 4 Feb. 1856. He was graduated with the degree of A.B. from Denison University in 1876; from the Rochester Theological Seminary in 1882; studied at the University of Leipzig in 1887 and at the University of Berlin in 1894. The degree of D.D. was conferred upon him by Denison University in 1897; by Oberlin College in 1912 and by Harvard University in 1920. From 1876-79 he taught in academics and public schools; from 1882-83 he was instructor in New

Testament Greek at the Rochester Theological Seminary; from 1883-86 he was associate professor and from 1886-92, professor of New Testament interpretation in the Newton Theological Seminary. He then was made professor and head of the department of New Testament literature and interpretation at the University of Chicago, which position he held until 20 Feb. 1923, when he became acting president of the university in place of Dr. Harry Pratt Judson, who resigned a short while before. From 1892-1920, Doctor Burton was one of the editors (from 1906-13, editor-in-chief) of the *Biblical World*; he was managing editor of the *American Journal of Theology*, 1907-15. He served as oriental educational commissioner of the University of Chicago in 1908-09 and was director of the university libraries of the University of Chicago after 1910. He has published: 'Syntax of the Moods and Tenses in New Testament Greek' (1893); 'Harmony of the Gospels for Historical Study' (with the late W. A. Stevens, 1894, 1904); 'Records and Letters of the Apostolic Age' (1895); 'Handbook of the Life of Paul' (1899); 'Constructive Studies in the Life of Christ' (with Shailer Mathews, 1901); 'Principles and Ideals of the Sunday School' (with Shailer Mathews, 1903); 'Short Introduction to the Gospels' (1904); 'Studies in the Gospel of Mark' (1904); 'Principles of Literary Criticism and Their Application to the Synoptic Problem' (1904); 'Biblical Ideas of Atonement' (with J. M. P. and G. B. Smith, 1909); 'Harmony of the Synoptic Gospels in English' (with Edgar Goodspeed, 1917); 'Spirit, Soul and Flesh in Greek Writings of the Earliest Period to 180 A. D.' (1918); 'Harmony of the Synoptic Gospels in Greek' (with Edgar J. Goodspeed, 1920), and 'Commentary on Paul's Epistle to the Galatians' (1920).

BUSINESS FAILURES. Notwithstanding a more or less general improvement in business conditions, following the depression of 1921, more failures occurred in the United States during 1922, according to records compiled by Bradstreets, than in any other year of the country's history. Liabilities were the second largest recorded. The number of failures in 1922, exclusive of banking suspension and personal bankruptcies, was 23,676 compared with 19,652 in 1921, and 8,881 in 1920, according to R. G. Dun and Company. Liabilities aggregated \$617,896,251 in 1922, compared with \$627,401,883 in 1921, and \$295,121,805 in 1920. The statistics for 1919 were exceptionally favorable, the 6,451 failures of that year being the smallest since 1881 and the indebtedness of \$113,291,237 less than the amounts for all other years back to 1905. Prior to 1922, the maximum in number of defaults was established in 1915, with an aggregate of 22,156, and that high mark was exceeded by 6.9 per cent during the year recently ended. The increase over the total for 1921 was 20.4 per cent, but the liabilities of the past year were 1.5 per cent below those of the earlier period. Commenting upon the business failures of 1922 Bradstreets whose figures differ but slightly from those of R. G. Dun and Company said: "The number in business in 1922 in the United States was 2,074,617, a gain of 1.2 per cent over 1921, but as failures increased 11.9 per cent, the proportion

of those failing to those in business rose to 1.08 per cent, as against ninety-seven hundredths of 1 per cent in 1921, forty-three hundredths of 1 per cent in 1920, and twenty-nine hundredths of 1 per cent in 1919, the latter the lowest percentage ever recorded since compilations of failures were begun. In 1922 the Southern States, with 6,483 failures, 24 per cent of all in the country, led in the list of casualties, as indeed they did in 1921, when they reported 6,161 failures, or 28 per cent of casualties. The Middle Atlantic States, with \$175,515,125, or 25 per cent, of all liabilities, led in the total of failure damage, but whereas every group of States showed more failures than the year before, the Western group, with \$156,137,876, or 24 per cent of all liabilities, alone showed an increase in this direction over 1921."

The following table shows the percentages of change in failures and in liabilities in 1922 as compared with 1921:

	Increase in number of failures	Decrease in liabilities
New England.....	5.3	50.7
Middle Atlantic.....	10.3	12.0
Central-western.....	17.7	*40.0
Northwestern.....	13.6	40.5
Southern.....	5.2	24.0
Far-western.....	31.5	8.0
Total United States.....	11.9	14.3
Manhattan and Bronx.....	5.5	10.0
Canada.....	35.6	12.1

* Increase.

The following table gives the failures by months and quarters for 1922:

1922	Number	Assets	Liabilities
January.....	2,722	\$66,218,132	\$105,773,899
February.....	2,072	41,559,827	66,922,618
March.....	2,297	35,362,139	61,768,569
First quarter....	7,091	\$143,140,098	\$234,465,086
April.....	1,954	\$45,614,287	\$73,085,708
May.....	1,775	27,217,463	48,208,104
June.....	1,660	20,152,404	39,592,368
Second quarter....	5,389	\$92,984,154	\$160,886,180
Six months.....	12,480	\$236,124,252	\$395,351,266
July.....	1,575	\$20,708,453	\$43,120,289
August.....	1,675	19,296,340	36,886,079
September.....	1,460	15,825,563	32,514,510
Third quarter....	4,710	\$55,830,356	\$112,520,878
Nine months.....	17,190	\$291,954,608	\$507,872,144
October.....	1,602	\$20,548,049	\$39,939,509
November.....	1,757	26,553,307	53,299,904
December.....	1,851	25,596,474	45,844,076
Fourth quarter....	5,211	\$73,451,788	\$139,864,410
Twelve months....	22,400	\$364,052,438	\$646,955,633

BUTLER, Howard Crosby, American archaeologist and educator: b. Croton Falls, N. Y., 7 March 1872; d. Paris, France, 15 Aug. 1922. He was educated at Princeton University and at the Columbia School of Architecture and American schools of classical studies in Rome and Athens. He organized and conducted archaeological expeditions in Syria in 1899, 1900, 1904-05, and 1909. In 1905 he was appointed professor of the history of architecture at Princeton. In 1914 he uncovered the great Temple of

Artemis at Sardis, capital of the ancient Lydian empire ruled over at its apogee by King Croesus of fabled wealth, and brought to light treasures of jewelry, pottery, inscriptions and many examples of art and craftsmanship. His last trip was for the Metropolitan Museum of Art, New York, to continue excavations at Sardis, and he died on a visit to Paris from Constantinople. His publications are: 'Scotland's Ruined Abbeys' (1900); 'The Story of Athens' (1902); 'Architecture'; Part II of 'Publications of American Expedition to Syria' (1903); 'Ancient Architecture in Syria' in Division II of 'Publications of Princeton Expedition to Syria.' He also contributed to archaeological journals.

BUTLER, Pierce, American jurist: b. Dakota County, Minn., 17 March 1866. He was graduated at Carleton College, Northfield, Minn., in 1887, studied law and was admitted to the Minnesota bar in 1888. In 1891 he became assistant State's attorney of Ramsey County and in 1893 was elected State's attorney. After serving four years, he retired and engaged in general practice. He soon became general attorney of the Chicago, Saint Paul, Minneapolis and Omaha Railroad. Retained by a group of railroads to look after their interests in connection with the Federal legislation providing for the valuation of railroads, he became a noted authority on railroad questions. Two years ago he was counsel for the government of Canada in the proceedings to determine the price which the Grand Trunk Pacific Railroad Company should be paid for its property when taken over by the government. He was also retained by the city of Toronto to handle its case in fixing the valuation at which its traction system should be bought by the city. In 1910 he was special counsel for the government in the prosecution of the Chicago meat-packers under indictment for violation of the Sherman Act. He has been a regent of the

University of Minnesota for 18 years. President Harding appointed him an associate justice of the United States Supreme Court on 23 Nov. 1922, and his nomination was confirmed, after much discussion, by the Senate on 21 Dec. 1922. Mr. Butler is a Democrat and a Roman Catholic. He succeeded Justice William R. Day, resigned.

BUTLER UNIVERSITY, a Christian-Disciples of Christ co-educational institution, founded in 1855 and located at Indianapolis, Ind. In 1922-23 it had a faculty of 40 members, 1,011 students, property valued at \$252,742.54 and an income of \$180,000. Robert Judson Aley, Ph.D., LL.D., is president.

BUTTER. See COLD STORAGE; DAIRY PRODUCTS; FOOD STANDARDS, FEDERAL.

BUTTERFIELD, Ernest Warren, American educator: b. Weathersfield, Vt., 7 June 1874. After attending the local elementary and secondary schools he entered Dartmouth College from which he was graduated with the degree of A.B. in 1897. In 1921 New Hampshire College conferred upon him the degree of LL.D. From 1897 to 1910 he held high school principalships in Bethlehem, N. H., Groveland, Mass., Laconia, N. H., and Dover, N. H. He then became superintendent of schools in Dover and held this position until 1915 when he was made deputy superintendent of public instruction for the State of New Hampshire. Two years later he was made State Commissioner of Education for New Hampshire which position he still holds. In 1919 Doctor Butterfield secured a revision of the New Hampshire public school system and in 1921 a codification of the school laws of the State. He is a member of the National Educational Association, the National Council of Education, the American Institute of Instruction, the New Hampshire State Teachers' Association (ex-president), and the Educational Council of New Hampshire.

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CABBAGE. The United States Department of Agriculture estimated the 1922 commercial late cabbage crop of the United States at 50,060 cars as compared with 27,260 cars in 1921. The acreage for the two years was 64,861 in 1922 and 50,946 in 1921. New York led in production in 1922 with a total of 17,924 cars grown on 24,895 acres; Wisconsin was second with 14,586 cars grown on 16,575 acres. The early 1922 crop was estimated at 15,696 cars and the intermediate crop at 22,074 cars, making a total crop of 87,830 cars. See also **HORTICULTURE**.

CABLE COMPANIES, Mileage and Revenue of. See **TELEGRAPH AND CABLE COMPANIES, MILEAGE AND REVENUE OF**.

CACAO. See **FOOD STANDARDS, FEDERAL**.

CAETANI, Gelasio, Italian Ambassador at Washington; b. Rome, 7 March 1877. His family is one of the oldest in Italy. One of his ancestors—Dominus Constantinus Gaetanus, who lived before the year 1000 A.D.—was granted by the King of Naples vast tracts of land in the Gaeta district, and many privileges. Two popes, Gelasius II (1118-19) and Boniface VIII (1294-1303) were members of this family. His family numbers also many legislators and men of letters, cardinals and military leaders. His father was a member of the Italian Parliament, Senator of the Kingdom and minister for Foreign Affairs in Marquis D'Rudini's Cabinet. His mother was Lady Ada Constance, Duchess of Lathom whom his father married in London. He himself bears the title of Prince. He was graduated as a civil engineer from the University of Rome and then came to America, enrolling as a student at the Columbia University School of Mines from which he was graduated with honors. For several years after leaving Columbia he worked in mines in the West and in Alaska, starting as an ordinary miner and working his way up until he became chief engineer of a mine. In 1913 he went into business for himself in San Francisco under the name of Burch, Caetani and Hershey, consulting engineers. When Italy declared war on Austria he left at once to join the Italian army and as an officer therein, distinguished himself. One of his war episodes suffices to show his military spirit and his gallantry. The Italians had been trying for some time to occupy the peak of a hill called Col d'Lana, which was the key to important positions and had made tremendous sacrifices without being able to reach their aim. Prince Caetani, who in the meantime had become a colonel, decided to blow up the position by digging a tunnel 2000 feet long through the hill and placing a mine underneath the peak. The feat was a very difficult one. A deviation of 10 per cent would have meant complete failure. Assisted by two other engineers and 80 miners,

and often risking his life, he succeeded in blowing up the hill before the time fixed by the Austrians for discharging a countermine. The Italians occupied the position, and the way for the Italian army to more important positions was cleared.

From the Alps Prince Caetani went to Macedonia and thence to the Carso. After the war he was sent by Italy to the Paris Peace Conference. Upon his return home, he started to work towards the redemption of the marshes of the Roman Plain. He was one of the supporters of Fascismo from its inception. He agreed with Mussolini that Italy can regain her prestige and economic independence by working hard, by eliminating strikes, and through strict enforcement of law and order. Mussolini rewarded his attachment in November 1922, by making him Italy's Ambassador at Washington. Upon his arrival in Washington as Ambassador, he said: "I have lived the greater part of my life in America, especially in the Far West and Middle West. I am proud to say that I have acquired American methods and systems."

CALIFORNIA, a Pacific Coast State of the United States lying between Oregon and Mexico. Its area is 158,297 square miles and in 1920 it had a population of 3,426,861, of whom 38,763 were colored, 28,812 Chinese, 71,952 Japanese, 17,360 Indians, and 3,263,711 whites. The census of 1920 showed a foreign-born population of 681,662, of whom 67,180 were Germans, 45,308 Irish, 58,572 English, 16,597 Scottish, 59,556 Canadians, 20,387 French, 88,502 Italian, and 31,925 Swedish, together with lesser groups of Portuguese, Swiss, Russians, etc. The chief cities, with their populations, are: Sacramento, the capital, 65,857; Los Angeles, 576,673; San Francisco, 506,676; Oakland, 216,361; San Diego, 74,683; Berkeley, 55,886; Pasadena, 45,354; and Fresno, 45,086.

Religion.—All the great denominations are well represented in the State as are most of the lesser ones. The larger church groups in the order of their numerical strength are: the Roman Catholic, Methodist, Presbyterian, Baptist and Congregationalists.

Education.—Primary instruction is free and compulsory for at least five months of the year for children between the ages of eight and 16 years of age. In 1920 there were 3,473 primary schools with 15,319 teachers and 500,357 pupils enrolled. In the same year there were 318 public high schools with 5,026 teachers and 162,650 pupils; seven State normal schools with 205 teachers and 2,198 students. There were also 756 teachers and 32,944 children in public kindergartens. The total expenditure on education in 1920 was \$54,228,000.

Charitable and Penal Institutions.—On 31 July 1922, there were 17,714 persons in State institutions as compared with 16,690 on the same

date in 1921. These were distributed as follows:

Industrial Home for the Adult Blind	133
Industrial Farm for Women	25
State reform schools:	
California School for Girls	159
Preston School of Industry	446
Whittier State School	294
State hospitals:	
Agnews	1,794
Mendocino	1,226
Napa	2,540
Norwalk	653
Southern California	2,497
Stockton	2,585
Institutions for feeble-minded:	
Sonoma State Home	1,562
Pacific Colony	30
State prisons:	
Folsom	1,143
San Quentin	2,627
Grand total	17,714

The charitable and penal institutions of the State are administered by a board of six unpaid members appointed by the Governor for a term of four years. The board in 1922 consisted of: president, Charles A. Ramm; vice-president, Carrie Parsons Bryant; John R. Haynes, M.D.; Jessica B. Peixotto; B. H. Pendleton; and Hattie Hecht Sloss.

Finances.—The receipts and disbursements for the fiscal year ending 30 June 1922 were as follows:

Balance on hand July, 1921	\$19,191,846 87
Receipts year ending 30 June 1922	95,764,903 55
Total	\$114,956,750 42
Disbursements year ended 30 June 1922	84,066,708 08
Balance on hand 1 July 1922	\$32,260,029 96

The bonded debt of California at the beginning of 1922 amounted to \$76,124,500. The State has no general property tax, the State government being supported by a tax on the gross receipts of public utilities, express companies, insurance companies, capital stock of banks, etc. The several classes of property assessed in 1921-22 were: real estate, \$2,286,301,355; improvements, \$983,625,375; personal property, \$714,476,947; money and solvent credits, \$53,221,648; making a total value of non-operative property of \$4,037,625,325. To this must be added operative property to the value of \$640,748,308; railroads assessed at \$243,412,852; making a grand total assessed value of \$4,921,786,485.

Communications.—There are 8,356 miles of railroads in the State. The total mileage of public roads in the State, exclusive of the roads within the limits of incorporated cities and towns, is 70,000 miles. The total mileage of the State highway system is 6,400 miles, including approximately 946 miles of special act roads maintained by the State. Roads, improved or contracted for at the close of 1922, had an aggregate length of 3,007 miles. The State highway system is constructed and maintained at the expense of the State. The cost of maintenance is provided for through funds derived from the license fees imposed on motor vehicles. State highway construction has been financed by three bond issues, as follows:

First State Highways Act	\$18,000,000
Highways Act of 1915	15,000,000
Constitutional amendment approved by the electorate, 1 July 1919	40,000,000

The source and amount of funds expended in 1921 were:

State highway bonds	\$9,366,721 09
Motor vehicle fund	3,303,446 76
Special appropriations	25,463 84
Contributions	95,132 96
Federal aid	1,569,154 89
	<u>\$14,359,920 35</u>

For 1922 the highway estimates were as follows:

Highway bond sales	\$12,000,000
Motor vehicle fund	3,500,000
Federal aid	2,500,000
	<u>\$18,000,000</u>

Agriculture and Horticulture.—The last Federal census showed 117,670 farms in the State comprising 29,365,667 acres of which 11,878,339 acres were improved land. The value of these farms was \$3,431,021,861, with an annual product valued at \$587,600,591. The acreage, yield and value of the chief crops in 1922 were as follows:

CROP	Acreage	Yield	Value
Corn	116,000	4,176,000 bu.	\$4,176,000
Wheat	712,000	15,308,000 bu.	17,604,000
Barley	1,152,000	36,864,000 bu.	23,224,000
Oats	150,000	5,250,000 bu.	3,360,000
Hops	9,000	14,760,000 lbs.	1,181,000
Hay (tame)	2,108,000	5,059,000 tons	75,885,000
Hay (wild)	160,000	176,000 tons	1,584,000
Beans	325,000	4,778,000 bu.	17,918,000
Potatoes	76,000	10,260,000 bu.	7,387,000
Cotton	203,000	85,000 bales	11,050,000
Apples		7,656,000 bu.	
Peaches		17,500,000 bu.	
Pears		5,205,000 bu.	

In 1922, there were 400,443 acres of vineyards in the State. In the same year the California Fruit Growers' Exchange reported that the State had furnished 12,926,358 boxes of oranges and grapefruit and 4,054,771 boxes of lemons to the markets of the United States and Canada. Based on exchange returns the growers received \$71,366,464 for this citrus crop, the delivered value in the markets being \$95,993,485, which included \$24,627,021 for freight and refrigeration. Strawberries, figs, apricots, plums, and other fruits are grown in vast quantities. On 1 Jan. 1923 there were in the State 363,000 horses valued at \$29,403,000; 61,000 mules valued at \$6,283,000; 645,000 milch cows valued at \$49,020,000; 1,435,000 other cattle valued at \$49,794,000; 2,403,000 sheep valued at \$19,456,000; and 876,000 swine valued at \$10,337,000.

Mining and Mineral Products.—Among the metals found in the State are gold, silver, copper, lead, mercury. Petroleum is the chief mineral output of the State, the yield therefrom being second only to that of Oklahoma. Granite and building stone is another important product, while all of the borax produced in the United States comes from California. Minor mineral products are pyrite, salt, mineral waters, magnesite, bismuth, asbestos, manganese, lithium, tungsten, chromium, infusorial earth, ochre, and many varieties of precious stones. The output of gold, silver, copper, lead, and zinc in California in 1922, according to preliminary estimates by Charles G. Yale, of the United States Geological Survey, Department of the Interior,

was valued at \$21,625,600, an increase of \$673,177 over that in 1921. The yield of gold, however, (\$14,845,000) was \$859,822 less and that of silver (3,181,200 ounces) was 448,023 ounces less than in 1921. The production of copper was 22,660,500 pounds, valued at \$3,036,500, an increase of 10,917,096 pounds and \$1,521,601; that of lead was 6,260,800 pounds, valued at \$356,800, an increase of 5,136,524 pounds and \$306,208; and that of zinc was 3,615,900 pounds, valued at \$206,100, an increase of 2,558,169 pounds and \$153,213.

The loss in gold for the year was almost entirely due to a diminution in the output of the deep or quartz mines. The disastrous fire in the Argonaut mine stopped the regular output from two of the largest producers on the mother lode and several other producers of note worked with reduced forces and mill equipment. Complaint was made of the scarcity of first-class miners, who seem to have gone into occupations that are more profitable and less hazardous than underground mining.

Manufacturing.—There are over 10,000 manufacturing establishments, very many of which are connected with the agricultural and horticultural industries of the State. The motion picture industry has its centre in the suburb of Los Angeles called Hollywood.

Fishing.—About 5,000 persons are employed in the coastal fisheries, the average value of which is about \$4,000,000.

Banking.—The State Banking Superintendent in his report to the Governor for 1922 gives the following statistics relative to the banks, depositors, etc., of the State of California:

"On 20 June 1917, the depositors in the State system were 1,584,940, of which the greater number, 1,160,810, were depositors in savings banks. Five years later the depositors in the State banks had increased virtually 1,000,000 in number.

"It is also interesting to note the increase in the number of banking institutions during the same period. On 20 June 1917, California had in its State system 448 banks and 126 branches, making a total of 574 banking institutions, while in 1922, five years later, there were 429 banks with 281 branches, or a total of 710 State banking institutions.

"During the same period the national banks located within the State had increased from 251 in 1917 to 295 in 1922, or a total increase of 180 in the number of banks.

"During the same period the assets of the national banks here increased from \$609,581,000 in 1917 to \$954,486,000 in 1922.

"In banking power California stands fifth among the states, exceeded only by New York, Pennsylvania, Illinois and Massachusetts."

Government and Constitution.—The State Legislature is bicameral—the Senate is composed of 40 members elected for terms of four years—one-half retiring every two years; the Assembly is composed of 80 members elected for two years. The legislature convenes biennially the first Monday in January in odd years. The State is divided into 58 counties, each administered by a board of five members elected from districts. Sacramento is the seat of the State government.

Officials.—Governor in 1922, Hon. William

D. Stephens; lieutenant-governor, C. C. Young; secretary of state, Frank C. Jordan; attorney-general, U. S. Webb; controller, Ray L. Riley; treasurer, Friend William Richardson; superintendent of education, Will C. Wood. On 8 Jan. 1923, Hon. Friend W. Richardson was inaugurated Governor of California before a joint session of the Legislature.

Judiciary.—Chief Justice, State Supreme Court, Lucien Shaw; associate justices, Curtis D. Wilbur, Thomas J. Lennon, W. A. Sloane, Charles S. A. Shurtleiff, William H. Waste and William P. Lawlor.

Legal holidays as provided in section 10 of the political code are as follows:

Every Sunday, 1 January, 12 February (Lincoln day), 22 February, 30 May, 4 July, 9 September, first Monday in September, 12 October (Columbus day), 25 December, 11 November (Armistice day), every day on which an election is held throughout the State, except a general primary election, and every day appointed by the President of the United States or by the Governor for a public fast, thanksgiving or holiday.

CALIFORNIA, University of, a State co-educational institution, founded 23 March 1868 and located at Berkeley, Calif. In 1922-23 it had a faculty, including assistants, of 1,860 members, property valued at \$10,000,000 and an income of \$7,000,000. In 1921-22 it had a total enrollment of 19,225 students in all departments. Of this number, 10,607 were resident students in Berkeley schools and colleges, the remainder included students in Lick Observatory; those in the graduate School of Tropical Agriculture; those in the Hastings College of Law; Medical School, College of Dentistry; College of Pharmacy, etc. The enrollment in the summer school of 1922 was 20,861, including 1,836 students of the regular session. David Prescott Barrows, LL.D., is president.

CAMBODIA, a native kingdom of Indo-China under the protection of France since 1863. It is bounded on the north by Laos and Siam, south by Cochin China, east by Annam and west by the Gulf of Siam. The area of the kingdom is 57,900 square miles with a population of 2,000,000, including 1,000 Europeans and about 150,000 Chinese. The reigning monarch is Sisowath who succeeded his father in 1904. The capital, Pnom-Penh, has a population of 87,870. The budget for the fiscal year 1921-22 balanced at 6,809,815 piastres. Smoked fish is the chief native industry. Other products are rice, kapok, cotton, cattle, hides, pepper, salt and tobacco, also coffee, rubber and iron. Salt, textiles and wines are the chief imports. Exports of rice aggregate 300,000 tons yearly, pepper 1,750,000 pounds, cotton 9,000 tons.

CAMEL'S HAIR PRODUCTS. In view of the great vogue of camel's hair fabrics during 1922 it is interesting to note the origin of the real camel's hair which is used in the making of these fabrics. Most of the fine camel's hair comes from the cooler sections of China, as the hair obtained from the camels in the very warmer sections is neither fine nor abundant. Camels at a certain season of the year shed their hair, this dropping off in bunches most frequently while they are asleep. When a cara-

van is on a trip there is always a special boy whose duty it is to gather up this shed hair in baskets before the march for the day is resumed. After this has been done and the caravan reaches a certain point, the hair is sorted and baled for export. In sorting into different grades, the basis of selection is the fineness in the diameter of the hair. The coarser the fibre the less valuable it is. After reaching the United States, dyeing, weaving and finishing processes are used that are in many respects dissimilar to those used in the production of wool fabrics. One of the features of the camel's hair fabrics is that they give warmth with lightness. In this connection it is pointed out that the camel must have adequate protection against the cold of the night on the desert, but must not be too heavily burdened in the heat of the noonday sun by thick hair.

CAMEROON, a former German colony of west Africa, lying between British Nigeria and the French Congo and extending from the coast in a northeasterly direction to the shore of Lake Chad. The colony was captured by French and British troops in February 1916 and at the peace settlement was divided between the French and British. It has a total area of 191,130 square miles and a population of 2,540,000. The British portion of the colony has an area of 31,000 square miles and stretches from the sea along the frontier of Nigeria to Lake Chad and is attached to Nigeria. Bantu tribes predominate in the coastal region and Sudanese in the interior. Cloves, vanilla, ginger, pepper, ivory and palm oil are the chief products of the colony. Ebony is abundant and gold and iron are found. The revenues in the British sphere in 1920 amounted to \$273,400. Imports the same year amounted in value to \$835,000 and exports to \$700,000. The chief imports were textiles, spirits, foodstuffs, hardware, etc. The mark is still in use valued at seven pence but with a purchasing power of the English shilling. The administrator of the British zone in 1922 was the Governor of Nigeria. The area allotted to France has an extent of 166,489 square miles, exclusive of the 107,270 square miles ceded to Germany by France in 1911 and which now forms part of French Equatorial Africa. The seat of the French mandatory administration is at Yaoundi. The general budget for the year 1921 balanced at 11,715,500 francs. The chief products are coffee, tobacco, palm oil and ivory. There are 359 miles of railway in the mandated territory. The Commissioner in 1922 was M. Carde.

CAMPFIRE GIRLS, an organization founded in 1912 by Dr. and Mrs. Luther Gulick for promoting the health of girls by means of outdoor life. The organization also inculcates thrift among its members and seeks to render the homely tasks of everyday life agreeable and to be enjoyed rather than dreaded. Camping out is an annual feature of the various units of the organization. These units are known as Campfires and are made up of from 6 to 20 girls under a guardian who must be at least 18 years of age. The dues of membership are \$1, which goes to the maintenance of the national headquarters in New York. The total membership in 1922 was estimated at 150,000 in

about 8,000 campfires or groups. The secretary and national executive in 1922 was L. F. Scott, 31 East 17th Street, New York, N. Y.

CAMPHOR, *Synthetic*, a preparation made from turpentine. In the process the turpentine is treated with certain chemicals and brought from one stage to another until finally camphor is produced. There is practically an unlimited source of supply of turpentine in the United States, most of which comes from the long-leaf pine of the South, the annual production reaching 25,000,000 gallons. The chemicals used in the manufacture of synthetic camphor are easily obtained at low cost in the United States. The manufacture of the synthetic camphor is the work of Prof. R. J. Moore, formerly of Columbia University. Previous to his discovery of the synthetic process American industries were entirely dependent on Japan for their supply of camphor. Camphor is used in the manufacture of films for motion pictures, billiard balls and in the celluloid industry for the making of brushes, combs, etc., also for piano keys, so-called "Parisian ivory," etc. Of late years the supply of camphor from Japan was insufficient for the requirements of the United States manufacturers, especially since Japan entered the motion picture field on a large scale and it was due to this shortage of the natural supply that Professor Moore was led to undertake experimental work to discover a synthetic substitute.

CANADA, *Dominion of*, a self-governing state of the British Empire, situated on the continent of North America to the north of the United States. The total land area of the Dominion is 3,603,910 square miles plus a water area of 125,755 square miles. The following table gives the area and population of the several provinces:

PROVINCES	Area, square miles	Population	
		1921	1911
Alberta.....	255,285	588,454	374,295
British Columbia.....	355,855	524,582	392,480
Manitoba.....	251,832	610,118	461,394
New Brunswick.....	27,985	387,876	351,889
Nova Scotia.....	21,428	523,837	492,338
Ontario.....	407,262	2,933,662	2,527,292
Prince Edward Island.....	2,184	88,615	93,728
Quebec.....	706,834	2,361,199	2,005,776
Saskatchewan.....	251,700	757,510	492,432
Yukon.....	207,076	4,157	8,512
North West Territories.....	1,242,224	7,988	6,507
Royal Canadian Navy.....		485	
Total.....	3,729,665	8,788,483	7,206,643

Of the population about 105,000 are Indian and 3,500 Eskimos. About 1,000,000 of the population are from the United Kingdom and 350,000 from the United States. The chief cities and their populations are: Montreal (607,063); Toronto (376,538); Winnipeg (178,364); Vancouver (100,401); Ottawa, the Dominion capital, (107,137); Hamilton (81,969); Quebec (78,710); Halifax (70,203); London (53,592); Calgary (63,117); Saint John, N. B.,

(46,504); Victoria (38,775); Edmonton (58,627), and Windsor (38,541). According to the census of 1921 the population is about equally divided as between urban and rural, there being 4,436,041 classified as rural and 4,352,442 as urban. Immigration which just prior to the World War had reached vast proportions fell off during that conflict but is again mounting. In 1922, 89,999 immigrants passed into the Dominion through its inland and ocean ports. Of these, 23,225 were English, 11,596 were Scotch, 3,572 Irish and 627 Welsh. In the same year there arrived 1,746 Chinese, 5,216 Polish Jews, 851 Russian Jews, 2,413 Italians, 2,707 Poles and 759 Rumanians. From the United States there arrived 29,345.

Religion.—There are in the Dominion 2,833,041 Roman Catholics, 1,115,324 Presbyterians, 1,079,892 Methodists, 1,043,017 Anglicans, 382,666 Baptists and 229,864 Lutherans.

Education.—Education is administered by the provincial governments. Primary education is free and compulsory. There are separate schools for Roman Catholics in Alberta, Ontario, Quebec and Saskatchewan. In the other provinces the primary schools are non-sectarian. The following table from 'The Statesman's Year Book' for 1922 shows the primary school statistics by provinces:

PROVINCES	Schools	Teachers	Pupils	Expenditure
Ontario.....	6,995	14,801	584,724	\$26,198,347
Quebec.....	7,589	16,213	486,201	16,844,684
Nova Scotia.....	1,797	3,012	106,982	2,097,593
New Brunswick.....	1,299	2,107	71,029	1,530,256
Manitoba.....	2,040	3,479	114,662	8,827,092
British Columbia.....	582	2,332	72,006	4,228,720
Prince Edw. Island.....	475	594	17,865	285,960
Alberta.....	3,046	4,902	121,567	8,805,529
Saskatchewan.....	4,145	6,550	164,219	11,783,943
Total.....	27,968	53,990	1,738,977	80,602,124

There are many special schools and for purposes of higher education there are 22 universities with affiliated professional and technical colleges. Of the universities, six are state controlled; three are controlled by the Anglican Church; five by the Roman Catholic Church; two each by the Baptists and Methodists and four are undenominational. The total number of students at the universities is 35,969.

Agriculture.—Statistics furnished by the Dominion Bureau of Statistics showed a great increase in the cereal yield of 1922 over that of 1921.

The total yield for the five principal grains dealt with in the report is placed at 1,078,423,000 bushels. This is an increase of 266,058,000 bushels, or 32¼ per cent over the quantity actually harvested in 1921, and, as it exceeds the bumper crop of 1915 by 157,310,000 bushels, is the largest aggregate yield for the five grains in the history of the Dominion. Wheat and flax are the only grains to which this remark does not apply, for although the yield of wheat is larger than that of 1921 by nearly 88,000,000 bushels, it falls short of the crop of seven years ago by 4,769,000 bushels, and the 1922 flax

crop is 818,000 bushels below that of 1915. The following table gives the latest estimate in bushels for the crop of 1922 in each of the five principal grains and the corresponding figures for 1921 and 1915:

	1922	1921	1915
Wheat.....	388,773,000	300,858,000	393,542,000
Oats.....	558,358,000	426,232,000	464,954,000
Barley.....	76,395,000	59,709,000	54,017,000
Rye.....	49,601,000	21,455,000	2,486,000
Flax.....	5,296,000	4,111,000	6,114,000
Total...	1,078,423,000	812,365,000	921,113,000

All the provinces except British Columbia—which is relatively a negligible quantity—contributed to the increase. The three prairie provinces, which furnish over 75 per cent of the Dominion's total output in the five grains, are estimated to have a crop of 811,957,000 bushels. This is the largest crop in the history of these provinces, being in excess of those of 1921 and 1915 by 179,977,000 and 129,245,000 bushels respectively. Wheat is estimated at 365,045,000 bushels, compared with 280,098,000 and 360,187,000 bushels for the harvests of 1921 and 1915 respectively; oats 338,898,000 bushels, compared with 284,147,000 and 279,692,000 bushels; and barley 46,937,000 bushels, against 44,681,000 and 36,003,000 bushels. The most remarkable increase was in rye, which, owing to the lateness of the spring, was largely sown as a substitute for wheat, the yield being estimated at 46,937,000 bushels, compared with 19,109,000 bushels in 1921 and 785,726 bushels in 1915.

Although the Dominion's yield per acre in the five principal grains shows a higher average than in 1921, it is, as a rule, much lower than for the bountiful harvest of 1915, thus indicating that the current year's increase over the latter is due, not to productivity of the soil, but to greater acreage under cultivation. The average for wheat is 17.25 bushels to the acre, compared with 13 in 1921 and 26.05 in 1915; for oats, 34.75, against 25.25 a year ago and 40.24 in 1915; barley, 28, against 21.25 in 1921 and 31.51 bushels per acre seven years ago. The fact that the central parts of Alberta and Saskatchewan experienced unusual drought during the whole of July undoubtedly materially affected the average yield.

The same authority places the total value for the whole of Canada of the principal field crops of 1922 at \$984,139,500, compared with \$931,863,670 for 1921, \$1,455,244,050 for 1920 and \$1,537,170,100 in 1919, the highest aggregate for Canada on record. The bureau's statement then goes on to show the part contributed by each of the great crops of the Dominion to this aggregate.

"The total for 1922," it states, "comprises \$333,966,000 for wheat, as compared with \$242,936,000 in 1921 and \$427,357,300 in 1920; \$197,783,000 for oats, as against \$146,395,300 in 1921 and \$280,115,400 in 1920; \$33,782,000 for barley, as against \$28,254,150 in 1921 and \$52,821,400 in 1920; \$21,235,000 for rye, as against \$15,399,300 in 1921 and \$15,085,650 in 1920; \$59,872,900 for other grains, as against \$48,036,920 in 1921 and

\$86,296,700 in 1920; \$54,253,000 for potatoes, as against \$82,147,600 in 1921 and \$129,803,300 in 1920; \$205,075,000 for hay, clover and alfalfa, as against \$280,975,200 in 1921 and \$362,053,900 in 1920, and \$78,172,600 for other root and fodder crops, as against \$87,719,200 in 1921 and \$101,710,400 in 1920.

"With few exceptions, the average prices per unit do not differ greatly from those of last year, the prices being as a rule somewhat more. For wheat the price for 1922 is 85c per bushel as against 81c last year. Oats are 39c against 34c, barley is 46c against 47c, rye 59c against 72c, peas \$1.81 against \$1.96, beans \$2.86 against \$2.90, buckwheat 80c against 89c, flax \$1.77 against \$1.44, potatoes 54c against 77c, turnips, etc., 27c against 34c.

"The abundance of the hay crop as compared with last year's scarcity is reflected in the price, which is for 1922 \$13.45 per ton as against \$23.56 per ton in 1921. Similarly, alfalfa is \$12.84 per ton as against \$19.95. By provinces the total value of the field crops is as follows: Prince Edward Island, \$10,388,800; Nova Scotia, \$24,236,000; New Brunswick, \$31,657,100; Quebec, \$167,599,000; Ontario, \$233,556,000; Manitoba, \$104,830,000; Saskatchewan, \$290,158,000; Alberta, \$94,369,600, and British Columbia, \$18,345,000."

According to the latest bulletin of the International Institute of Agriculture at Rome, Canada figures as the greatest wheat exporting country in the world. The exportable surplus estimated by the Institute as of 1 August is as follows: Canada, 312,000,000 bushels; United States, 305,000,000; British India, 37,000,000; Australia, 33,000,000; Argentine, 20,000,000, and other countries 29,000,000.

Apple and potato production decreased in 1922 in most provinces. The exception to the rule was the Province of Quebec, where the apple crop was 75 per cent in excess of that of 1921 or 61,600 barrels. In Ontario the apple production was 90 per cent of that of 1921, or 796,500 barrels. The potato acreage was considerably larger than that of 1921 but the yield per acre was somewhat less, due to rot, in many districts. The total production was placed at 18,480,000 bushels. British Columbia produced 2,538,000 boxes of apples or about 80 per cent of the crop of 1921. The potato crop in that province was about 90 per cent of that of 1921 or 2,646,000 bushels. The potato production in the other western provinces was: Alberta, 6,861,000 bushels; Saskatchewan, 7,240,800 bushels; Manitoba, 969,000 bushels. The New Brunswick apple crop in 1922 was 41,250 barrels. The potato crop in this province was only 50 per cent of normal, while in Prince Edward Island it was 75 per cent of normal. The Nova Scotia apple crop amounted to 1,628,800 barrels. The potato crop of this province was 7,055,400 bushels or about 10 per cent larger than that of the year 1921. Among the lesser crops are peas, beans, buckwheat, turnips, sugar beets, fodder corn and alfalfa. The live stock of the Dominion on 15 June 1921 were: 3,814,000 horses, 3,737,000 milk cows, 6,469,000 other cattle, 3,676,000 sheep, 3,905,000 swine, 34,340,000 poultry. The wool clip for 1922 was estimated at 21,000,000 pounds. Dairying has become a major industry,

the annual production of butter being 110,000,000 pounds; tactory cheese, 138,000,000 pounds; condensed milk, 51,000,000 pounds; evaporated milk, 30,000,000 pounds, and whole milk sold 29,000,000 gallons.

On and after 1 Jan. 1923, grains, vegetables and seeds in Canada are to be sold only by weight. Hitherto, corn, wheat, barley, oats, maize, dried peas, dried beans, linseed, potatoes and the seed of grass, clover, vetches, swedes, turnips, rape cabbages, kale, mangels, beets, etc., were sold by the quarter, which is a variable quantity depending on the material. For instance, a quarter of maize is 480 pounds; one of wheat, 504 pounds; oats may be either 304, 320 or 336 pounds; barley may be either 400, 448 or 416 pounds, in each case according to the country of origin.

Fur-farming in Canada now appears to be on a sound basis as an established and growing industry of some importance. An official report, issued December 1922, shows that there are more than 800 fur-farms in the Dominion, with real estate and fur-bearing animals of an aggregate value of more than \$7,500,000, and a gross income of about \$1,500,000, annually from the sale of foxes and pelts. Such farms are found in all of the nine provinces and in the Yukon Territory.

No fewer than 225 new farms were brought into operation during 1921. Pelts of animals raised on fur-farms accounted for approximately 6 per cent of total value—officially placed at \$10,151,594—of raw fur production in Canada for the season, 1920-21, the balance being taken by trappers. During the last fiscal year, 1,390 live foxes, valued at \$310,709, were exported from the Dominion.

Silver foxes constitute approximately 78 per cent of the total number of more than 23,000 fur-bearing animals on Canadian fur-farms. The fox has been proved to be the animal most suited to domestication, although farms for raising certain other kinds of fur-bearing stock are now being successfully operated. Statistics for 1921 show 375 fox-farms in Prince Edward Island, with a total of 11,486 foxes. Nova Scotia, New Brunswick, Quebec, and Ontario have also engaged largely in fox farming, and the other provinces of the Dominion have done so to a smaller extent.

Other fur-bearing animals raised on fur-farms in Canada are mink, raccoon, marten, fisher, skunk, opossum, beaver, muskrat, and Karakul sheep. In 1921, the number of miscellaneous fur-bearing animal farms—i. e., farms engaged in raising fur-bearing animals other than foxes—was thirty-seven, compared with nine in the previous year. Mink farms are the most numerous of the miscellaneous class, followed by those handling raccoon and Karakul sheep. Three beaver farms and three muskrat farms were recorded in 1921.

Forestry.—There are nearly 600,000,000 acres under timber, the largest acreages being those of Quebec, 100,000,000 acres; Ontario, 70,000,000 acres; British Columbia, 50,000,000 acres; the prairie provinces, 11,000,000 acres; and New Brunswick, 9,000,000 acres. The total export of manufactured or partly manufactured wood up to 1 Nov. 1922 was valued at \$66,426,783 and by the close of 1922 it was esti-

mated that 1,310,000,000 tons of newsprint paper had been made. The value of newsprint paper export for 1922 was \$67,000,000 and the value of all wood and paper exports for the year was \$209,758,000. There is \$250,000,000 invested in the lumber industry, which employs about 73,000 hands in 3,410 mills.

Mineral Production.—The value of the output of metallic minerals in Canada during 1922 was \$61,731,000 (1921, \$49,343,232), non-metallic minerals \$83,891,000 (1921, \$87,833,161), and structural materials and clay products \$35,000,000 (1921, \$37,139,260), according to the Chief of the Mining and Metallurgical Branch, Dominion Bureau of Statistics.

The outstanding feature of the metal production was the excellent gain made in the output of gold by Ontario and British Columbia. The total gold output of Canada in 1922 amounted to 1,230,985 fine ounces (value \$25,446,717) against the 1921 production of 926,329 fine ounces (value \$19,148,920). In spite of the medium price silver obtained, production of this metal amounted to 15,726,000 ounces, a gain of more than 2,000,000 ounces over 1921.

An increased output of copper (51,223,000 pounds in 1922 as against 47,620,820 pounds in 1921) is said to have been due entirely to the resumption of nickel-copper smelting. The improvement in the copper industry during the latter part of 1922 is predicted to lead to greater activity in this field in 1923. Lead output was 98,738,000 pounds in 1922 and 66,679,000 pounds in 1921. Zinc production amounted to 54,000,000 pounds, exceeding 1921 production by approximately 1,000,000 pounds.

The output of coal from Canadian mines during the calendar year 1922 was estimated by the Dominion Bureau of Statistics at approximately 14,210,000 tons valued at \$68,349,500, as compared with 15,057,493 tons, valued at \$72,451,656, in 1921; 16,946,764 tons, valued at \$82,496,538, in 1920; and 13,919,096 tons, valued at \$55,622,670, in 1919. The great strike which tied up the United States coal mines for several months was reflected in Canada and resulted in a loss of 1,199,427 working days. The Province of Alberta led in production with 5,387,000 tons, a little more than half of which was lignite and nearly all the rest bituminous. Nova Scotia contributed 5,349,000 tons; British Columbia, 2,936,000 tons, and New Brunswick and Saskatchewan 288,000 and 250,000 tons, respectively. Canada exported 1,821,000 tons of coal during the year. In spite of the strike, the amount of coal exported was only about 166,000 tons less than in the preceding year. The exports during 1920 were 2,558,000 tons, and in 1919 amounted to about 2,000,000 tons. For the first time in many years coal was imported from Great Britain, about 874,000 tons having been received, 710,000 tons bituminous and 164,000 tons anthracite. Imports of coal from the United States amounted to 13,937,000 tons—11,255,000 tons of bituminous and 2,683,000 tons of anthracite. As compared with the records for the preceding year, the imports of bituminous coal from the United States were 2,300,000 tons lower, and the imports of anthracite were 1,885,000 tons less. Comparison with 1920 figures would indicate an even greater shortage, as the imports of United States bituminous coal in that year were close to

16,000,000 tons, and the anthracite imports came very near 5,000,000 tons.

Canada's production of iron and steel in 1922, estimated by the Dominion Bureau of Statistics, showed a considerable decrease from the previous year. Total output of pig iron was 383,057 long tons, compared with 594,354 tons in 1921, 974,000 tons in 1920, 819,000 tons in 1919, and the record of 1,067,000 tons in 1918. The maximum production in 1922 was in March, when output was 41,733 tons; the minimum was in May with 23,363 tons.

Steel production totaled 485,643 tons, compared with 667,484 tons in 1921, 1,109,000 tons in 1920, 924,000 tons in 1919 and the record of 1,681,000 tons in 1918. There was considerable improvement during the last half, output for the first half being 177,080 tons and the second half 308,140 tons.

Fisheries.—The fisheries of the Atlantic Coast comprise the deep-sea fishing for cod, haddock, hake, pollock, and halibut and the in-shore or coastal fishing for herring, mackerel, alewife, shad, smelt, flounder and sardines. Lobster and oyster catches are also considerable in the Atlantic area. On the Pacific Coast the salmon fisheries are predominant but halibut fishing is becoming of large proportions. The inland lake fisheries yield whitefish, trout, pike, pickerel, sturgeon and fresh-water herring. About \$50,000,000 represents the entire investment in this industry, the catch from which in 1922 was valued at \$42,124,000. About 70,000 persons are employed in the industry.

Economic Condition in 1922.—The Canadian Bank of Commerce of Toronto in a review of the Dominion published in October 1922 said: "Reports that business is showing marked improvement are becoming more and more frequent from all parts of the country. There is still, of course, an unevenness in industrial conditions, and certain industries which depend primarily on large supplies of coal, iron and steel have, in a number of cases, been obliged to close their plants. But this is obviously the result of an artificial curtailment of supply rather than a decreased demand. On the other hand, an increasing number of factories are running at full capacity, with many working overtime, the building trades continue to be extremely active, and there has been a marked revival of highway and railway construction work.

"Unemployment on a large scale is almost a thing of the past, and there appears to be in some industries a real scarcity of skilled labor. On the whole, there is little complaint from the industrial world, and in the case of the wholesale and retail trades the sobering experience of the last two years has modified to a large extent the general opinion as to what constitutes an autumn revival of business. Orders, though moderate in volume, have become steadier, collections have improved and there appears to be a disposition on the part of customers to be satisfied with a much shorter term of credit.

"It is true that the number of commercial failures continues to be higher than at this time last year, but the amounts involved show a substantial decline. This may be taken to mean that, although the natural process of weeding out continues, there are no longer large accumu-

lations of unsalable commodities to act as a drag on the market.

"The laws of economics involve many compensations and not the least among these is that resulting from a high tariff and an adverse exchange. Within the last few years a great many manufacturing firms in the United States have built branch factories in Canada, thereby increasing the aggregate production of this country and swelling the local demand for labor and other services and, to a large extent, for Canadian materials and supplies. Although adverse exchange conditions no longer exist, American enterprises continue to establish themselves in Canada, and this in itself is a striking testimony to the soundness of economic conditions in this country.

"While new industries both Canadian and American, are being established in this country at a satisfactory rate, the same cannot be said of the new settlers. The total number of immigrants arriving in Canada during the four months ending last July was 32,849, as against 49,926 for the corresponding period last year; this decrease of 34 per cent is accounted for chiefly by the decline in the number of arrivals from Great Britain and Europe. Now that steps are being taken to make the immigration policy of Canada less restrictive in its effect, the favorable position of the Dominion should attract a large number of settlers from Great Britain and other countries."

Building projects for the Dominion in 1922 totaled \$331,843,000, according to Maclean's Building Reports. Ontario led, with \$166,628,000, with Quebec second at \$103,291,000; British Columbia, \$27,406,000; Manitoba, \$9,365,000; Alberta, \$8,903,000; Nova Scotia, \$5,769,000; Saskatchewan, \$5,064,000; New Brunswick, \$4,926,000; Prince Edward Island, \$458,200.

There were 21,054 houses built at a value of \$99,858,800. Schools came next with \$27,364,200; factories, \$25,755,800; stores, \$19,212,500. Included in the list were 38 theatres at \$1,189,300, and 204 churches, at \$6,979,700.

Commerce.—During the 12 months ended 31 Oct. 1922 the total imports from all countries were \$740,261,771, a decrease of \$119,448,391, under the total of 1921, the decrease being practically accounted for by the falling off from the United States. From the United Kingdom a total of \$131,000,000 worth of products were imported, an increase of \$2,000,000.

Exports of domestic products from Canada to all countries fell from \$926,654,122 in the 12 months ending 31 Oct. 1921, to \$815,530,510 during the 12 months ended 31 Oct. 1922, a decrease of \$111,123,612. The decrease in value of exports from Canada to the United States when these two periods are compared is shown to be \$63,700,800. During the 12 months ending 31 Oct. 1922, exports to the United States were to the value of \$327,037,218. During the previous 12-months period they totalled \$390,738,018. Exports to the United Kingdom, on the other hand, increased from \$296,778,084 in the 12 months ending 31 Oct. 1921, to \$326,370,742 in the period ended 31 Oct. 1922.

The following table shows the most important articles of Canadian export and their value in 1913 (the last pre-war year), in 1920 (the year of greatest inflation), and in 1921 (the

first year showing a return to normal conditions):

ARTICLES	1913	1920	1921
Animals, living....	\$8,526,683	\$28,129,834	\$12,326,900
Butter.....	311,602	7,457,097	3,648,047
Cheese.....	19,441,127	39,844,883	27,098,908
Clothing.....	400,290	7,113,927	622,585
Coal.....	3,961,351	18,014,899	13,896,370
Fish.....	19,715,644	36,608,435	28,668,817
Furs.....	5,387,282	17,541,704	13,115,076
Grain:			
Oats.....	12,294,674	15,269,480	17,715,180
Wheat.....	125,728,728	312,312,765	214,604,099
Hides and skins.....	8,889,475	9,357,071	3,665,660
Leather.....	2,577,869	11,609,051	4,560,903
Meats:			
Bacon and hams.....	4,274,824	34,288,497	25,613,052
Canned meats.....	84,007	286,426	193,393
Pork.....	100,494	1,025,765	512,902
Metals:			
Aluminum, bars, etc.....	1,762,214	6,094,623	1,259,703
Asbestos.....	2,848,047	11,887,456	5,681,272
Brass, old and scrap.....	*	475,809	126,832
Copper.....	9,602,911	15,877,306	7,455,794
Gold.....	12,770,838	4,642,909	2,550,524
Iron and steel.....	10,991,276	62,240,099	23,087,016
Nickel.....	5,195,560	11,988,857	3,102,944
Silver.....	21,441,220	12,238,209	8,199,663
Milk and cream.....	1,623,767	11,043,042	8,077,808
Paper, printing.....	9,990,378	72,920,225	69,786,317
Rubber.....	626,035	13,070,124	3,781,975
Seeds: Flax.....	27,030,826	4,946,030	7,907,850
Textiles.....	1,137,387	15,095,437	5,721,651
Vegetables.....	1,533,790	13,865,322	3,549,988
Vehicles:			
Motor cars.....	3,395,382	16,635,235	5,205,444
Motor-car parts.....	210,623	4,276,027	1,128,181
Wheat flour.....	21,011,285	55,302,988	60,110,059
Wood:			
Unmanufactured.....	42,479,826	123,512,727	73,565,900
Manufactured—Wood pulp.....	*	76,383,978	33,033,675
All other.....	50,872,652	201,301,205	113,125,332
Total exports.....	436,218,067	1,272,657,442	802,699,820
Not stated.....			

Exports of butter from Montreal to Europe in 1922 were the largest since 1906, according to the Dominion Department of Agriculture. A total of 318,144 packages was exported between 1 May and 30 November, compared to 70,369 packages in 1921, showing an increase of 247,775. In 1906 361,400 packages were shipped, and in 1905, the highest year on record, 573,449 were exported.

Exports to the United States were 8,747 packages, Newfoundland 4,389 and British West Indies 1,103. These figures represent a decrease of 21,172 packages in the case of the United States and 1,405 in the case of Newfoundland. Total shipments were 332,383 packages in 1922.

The increase in butter exports was largely caused by the better prices prevailing for that product in Great Britain and the fact that supplies in that country were the lowest in years. As there was an opposite price movement in cheese, export figures for the latter commodity show a decrease to a figure which has been touched only once in the past 22 years.

Exports of cheese to Europe were 1,166,147 boxes, a decrease of 275,632 boxes from last season. The total in 1916 was 1,142,699 and in 1903 2,395,982, the low records for the period. Cheese shipments to the United States in 1922

were 30,614, compared to 26,231 in 1921; Newfoundland, 2,727, compared to 3,263, and British West Indies 2,646. Total exports were 1,202,134 boxes in 1922,

Shipments of eggs to Europe were 208,700 cases, a decrease of 5,503 cases from 1921. The principal articles on the Canadian import list are iron and steel, cotton, coal, crude and refined petroleum, silk, wool, sugar and molasses, vehicles, wood, chemicals, bricks, clays and tiles, breadstuffs and rubber.

Finance.—The expenditures for the various public services for 1922 are given in detail in the following table:

Public debt, including sinking funds.....	\$142,800,127
Charges of management.....	816,575
Civil government.....	10,856,022
Department of justice.....	2,181,633
Canadian mounted police.....	3,527,571
Penitentiaries.....	1,371,600
Legislation.....	2,288,847
Agriculture.....	5,602,140
Department of health.....	721,940
Immigration and colonization.....	1,636,190
Pensions.....	31,816,924
Superannuation.....	660,000
Militia and defense.....	11,890,000
Railways and canals, chargeable to income.....	168,009,791
Mail subsidies and steamship subventions.....	1,033,801
Ocean and river service.....	1,950,300
Lighthouse and coast service.....	2,465,100
Scientific institutions.....	684,535
Steamboat inspection.....	108,810
Fisheries.....	1,435,000
Subsidies to provinces.....	11,490,860
Department of mines.....	641,600
Indians.....	2,750,639
Government of the Northwest Territories.....	195,000
Government of the Yukon Territory.....	120,000
Dominion lands and parks.....	5,142,070
Soldiers' land settlement.....	35,017,000
Soldiers' civil re-establishment.....	19,310,000
Miscellaneous.....	16,057,231
Customs and inland revenue.....	6,782,195
Air Board.....	1,625,000
Weights and measures, gas and electric inspection.....	487,070
Railways and canals.....	9,270,000
Public works — chargeable to revenue collection.....	1,080,600
Public works — chargeable to income.....	11,115,283
Post office.....	25,028,323
Trade and commerce.....	3,727,433
Naval service.....	3,726,980
Labor.....	1,402,000
Total Consolidated Fund.....	\$546,826,191
Railways and canals — Capital.....	11,495,127
Public works — Capital.....	5,031,000
Public works — Capital — Marine Dept.....	10,933,000
Total capital.....	\$27,459,127
Total.....	\$574,285,318
Demobilization.....	7,777,380
Grand total.....	\$582,062,698

The net debt at the beginning of 1922 amounted to \$2,366,861,252, contrasted with \$2,308,218,462 12 months before, and with \$303,562,104 at the end of 1913.

Bank deposits in the Dominion decreased by \$298,000,000 in the two years ended 30 Sept. 1922, while bank note circulation decreased in the same period by \$54,000,000. In September bank deposits payable on demand and after a fixed date, together totaled \$1,648,000,000, compared with \$1,798,000,000 in September 1921 and with \$1,947,000,000 in September 1920. Notes in circulation in September were \$176,000,000 compared with \$186,000,000 in 1921 and \$231,000,000 in 1920. Governmental and bank gold

reserve as of 31 Aug. 1922 totaled \$174,200,000 compared with \$173,300,000 in 1921 and \$186,600,000 in 1920. During the year the Canadian dollar returned to par. This was largely due to the building up of a favorable trade balance and the decrease in note circulation, also to the large wheat crop.

Communications.—Canada has 51,582 miles of railways. Of his total about 22,646 miles are operated by the Government. In 1922 the Canadian National Railways was formally created through the merging of the Canadian Northern and the Grand Trunk lines by the Cabinet. The following report issued by the Dominion Department of Railways and Canals gives combined statistics for first time of Canada's national railway system, including Grand Trunk Railway. At 31 Dec. 1921 the total long-term or funded debt of railways taken over by Dominion Government was \$1,342,582,740, of which the Canadian Northern owed the Dominion for advances and accrued interest \$286,279,000; the Grand Trunk Pacific \$97,209,000 and the Grand Trunk \$76,965,000. In addition, capital expenditure on older national railways, built by Dominion—Intercolonial and National Transcontinental—totaled \$415,438,000. The total amount under head of fixed charges in 1921 was \$60,023,000 or nearly \$7 a head of population. Total operating revenues in 1921 were \$235,789,013; total operating expenses \$247,509,397 and total operating deficit \$11,720,384. Freight carried was in 1921, 51,865,596 tons; 1920, 62,986,194 tons; passengers carried, 1921, 26,617,850; 1920, 29,421,008; freight earnings, 1921, \$172,202,025; passenger earnings, \$42,053,232; labor operating payroll, \$149,426,000.

The Dominion has a system of canal, river and lake navigation over 2,700 miles in length, and vessels reach the Atlantic from lake ports without transshipping cargo. The freight traffic on Canadian canals increased 672,182 tons during 1921 compared with 1920 as the result of gains on the Welland of 800,894 tons, on the Saint Lawrence of 666,103 tons, and on the Saint Andrews of 456 tons. These increases were due almost entirely to large gains in shipments of grain and lesser ones in shipments of pig iron, iron and steel, petroleum and oil, and sugar. The traffic on the Welland and Saint Lawrence canals was the heaviest in their histories except for the years 1913 and 1914. There was a decrease on the Canadian Sault Sainte Marie Canal of 480,226 tons, due to a falling off of 730,568 tons in iron ore carried, 100,388 tons in soft coal, 42,410 tons in pulp wood and other minor decreases, although grain shipments were considerably heavier. There was also a falling off of 30,555,288 tons of freight through the American locks, caused almost entirely by the slump in iron-ore shipments, which dropped from 55,784,496 tons to 22,457,888 tons. Chambly Canal traffic declined by 145,042 tons, the largest decreases being pulpwood 83,760 tons, and sawn lumber 44,511 tons. Ottawa Canal traffic fell short of the 1920 total by 61,560 tons, with a decrease of 56,560 tons in lumber. The Murray Canal showed a decrease of 82,052 tons in crushed stone and a total loss of 90,955 tons. The other canals showed small decreases.

There are 1,699 miles of electric railways

which in 1922 carried 841,117,342 passengers and about 3,000,000 tons of freight. There are 12,251 postoffices; 49,576 miles of telegraph lines and 856,266 telephones. There are several powerful wireless stations.

Shipping.—The Canadian Register of Shipping for 1922 shows that the total gross tonnage in October 1922 was 1,781,018. The number of steamers was 4,357, with a gross tonnage of 1,305,581. There were 3,255 sailing vessels of 475,431 gross tons. The total appropriations of the Canadian Government for mail subsidies and steamship subventions for the year 1915 were \$2,962,900; for 1921 they were \$1,463,467; for 1922 they were \$1,033,800. Clearances of seagoing vessels from Canadian ports average approximately 12,000,000 tons and 16,000 vessels yearly. Coastal vessels clear to the average of 73,000, aggregating 25,000,000 tons yearly.

Defense.—The land forces are the active militia and the reserves. The former is divided into the permanent and non-permanent forces. Service in the active militia is voluntary and for three years, but in case of necessity the Government may apply compulsion. The permanent force comprises all arms of service and provides the garrisons and the personnel for the various military schools. The authorized establishment of the permanent force is 6,700. The non-permanent active militia has an estimated strength of 68,000 men. These organizations are supplemented by numerous cadet corps and rifle associations.

Schemes for a Canadian navy are in abeyance for the present. Two old cruisers formerly used as training ships have been sold. Two submarines built in the United States during the war are now on the Pacific Coast and two others have been allocated to the Dominion by the British Admiralty. Two destroyers have been acquired also. About 60 young Canadians are receiving naval training on British ships. The present plans contemplate first coast defense and then to work into the larger undertaking of providing a Canadian navy for service on the seas.

Government.—The British North America Act of 1867 created the Dominion of Canada with federated provinces and a constitution similar in principle to that of the United Kingdom. This Act declares that the executive government of Canada shall continue to be vested in the sovereign of the United Kingdom, represented for federal purposes by the Governor-General, just as for Provincial purposes by the Lieutenant-Governor. The Governor-General is advised by the King's Privy Council of Canada, a committee of which constitutes the ministry of the day. The Dominion Parliament consists of the King, the Senate and the House of Commons. It must meet at least once a year, so that 12 months do not elapse between the last meeting in one session and the first meeting of the next. Senators, 96 in number, who are appointed for life by the Governor-General in council, must be 30 years of age, British subjects, residents of the Province for which they are appointed, and possess \$4,000 over and above their liabilities. Members of the House of Commons, 235 in number, are elected by the people for the duration of the Parliament, which may not be longer than five

years. The Speaker of the Senate is chosen by the Governor-General in council, the Speaker of the House is chosen by the members of that house. Provincial representation in the Senate is as follows: Ontario, 24; Quebec, 24; Nova Scotia, 10; New Brunswick, 10; Prince Edward Island, 4; Manitoba, 6; British Columbia, 6; Alberta, 6; Saskatchewan, 6. Representation in the Commons is as follows: Ontario, 82; Quebec, 65; Nova Scotia, 16; New Brunswick, 11; Manitoba, 15; British Columbia, 13; Prince Edward Island, 4; Saskatchewan, 16; Alberta, 12; the Yukon, 1. Women have the vote and are eligible for election to the Commons.

The powers of the Dominion Parliament include all subjects not assigned exclusively to the Provincial Legislatures. More especially it has exclusive legislative authority in all matters relating to the following: Public debt and property; regulation of trade and commerce; raising of money by any mode of taxation; borrowing of money on the public credit; postal service; census and statistics; militia, military and naval service and defense; fixing and providing for salaries and allowances of the officers of the Government; beacons, buoys and light-houses; navigation and shipping; quarantine and the establishment and maintenance of marine hospitals; seacoast and inland fisheries; ferries on an international or interprovincial frontier; currency and coinage; banking, incorporation of banks and issue of paper money; savings banks; weights and measures; bills of exchange and promissory notes; interest; legal tender; bankruptcy and insolvency; patents of invention and discovery; copyrights; Indians and lands reserved for Indians; naturalization and aliens; marriage and divorce; the criminal law, except the constitution of courts of criminal jurisdiction, but including the procedure in criminal matters; the establishment, maintenance and management of penitentiaries; such classes of subjects as are expressly excepted in the enumeration of the classes of subjects by the Act exclusively assigned to the Legislatures of the Provinces.

At the general election of December 1921 117 Liberals were returned to the House of Commons; 65 Progressives; 51 Conservatives and two Laborites. For Cabinet officers in 1922 see following section on *History*.

The Governor-General in 1922 was General the Lord Byng of Vinny, who received his present appointment 2 Aug. 1921. He receives a salary of \$50,000 per annum.

History.—In the new party alignment due to the Liberal triumph in the December elections of 1921, Arthur Meighen, the defeated Prime Minister, undertook to lead an opposition group of Conservatives in the House of Commons. The new Premier, William Lyon Mackenzie King, stated on 29 December that national unity through having all parts of the Dominion represented in his Cabinet was the principal aim of his administration. On the same date he announced his Cabinet as follows:

W: L. Mackenzie King of Ontario, Premier; William S. Fielding of Nova Scotia, Finance; Daniel D. Mackenzie of Nova Scotia, Solicitor-General and Minister without portfolio; A. B. Copp of New Brunswick, Secretary of State; John E. Sinclair of Prince Edward Island, Min-

ister without portfolio; Raoul Dandurand of Quebec, Minister without portfolio; Henri S. Beland of Quebec, Health and Soldiers' Re-establishment; Sir Lomer Gouin of Quebec, Justice; Jacques Bureau of Quebec, Customs and Excise; Ernest Laponte of Quebec, Marine and Fisheries; James A. Robb of Quebec, Trade and Commerce; George P. Graham of Ontario, Militia, Defense and Naval Service; Charles Murphy of Ontario, Postmaster-General; Thomas A. Low of Ontario, Minister without portfolio; William C. Kennedy of Ontario, Labor; William R. Motherwell of Saskatchewan, Agriculture; Charles Stewart of Alberta, Interior, Mines and Indian Affairs; Hewitt Bostock of British Columbia, Public Works.

A post-election survey of the political parties showed that the Liberals had been returned to office with a very slight margin of safety in the House, while the Senate had a Conservative majority of 30. The new Premier was obliged to forego his project of a strictly National government through the refusal of the leader of the Progressives and the leader of the Ontario Farm-Labor Coalition to join his ministry. A further analysis of the election showed a growing cleavage between the western farmers and the industrial and banking interests of the older parts of the Dominion. In the East it was regarded as political heresy that the West should have in Parliament a bloc determined to make tariff changes and also changes in the taxation system while assuming no direct responsibility for the general public policy of the Dominion. The outlook early in 1922 was that the farmers would retain their own political organization. The Redistribution Bill was introduced at the 1922 session of the Parliament following the census returns. By the terms of the British North America Act the representation of Quebec is fixed at 65 members, and the ratio of that number to the total population of the Province is the unit which determines the representation of the other Provinces in the House of Commons. Quebec returned a population of 2,349,067 in 1921. By dividing this number by 65 it is seen that the unit of population for determining the representation of the other Provinces has risen from 30,858 in 1911 to 36,100. The representation of a Province is reached, therefore, by dividing this number into its population.

On 24 March the Department of Justice ruled that no women Senators could be created in the Dominion without an amendment to the British North America Act. During the 1922 session of the Parliament the question of a Dominion-wide Prohibition Act was kept in abeyance. A reciprocal trade agreement with the United States loomed on the political horizon in the spring but the Dominion Finance Minister learned from American sources that the new United States Tariff Act would arrange for favored nation treatment under which some measure of relief would be afforded to Canada. On 29 May it was announced in the Commons that the United States Government was prepared to enter into a treaty preliminary to the construction of the Saint Lawrence waterway. The Dominion Government did not consider the time opportune for the subject and pleaded the necessity of making a complete study of the sub-

ject so as leave the question open for future negotiations. In July the Premier visited Washington and discussed with the American Government the question of limiting the naval forces of Canada and the United States on the Great Lakes and Lake Champlain, the coastal fisheries, the great waterways, Canadian representation at Washington and reciprocal treatment of Canadian and American nationals in income taxation. Labor troubles came to the front, due to the coal strike in the United States and it was feared that the shopmen's strike in the United States would spread to the Dominion. Troops were ordered to certain areas to quell disturbances. The Premier asked the presidents of the Canadian railways to restore previous wage scales pending the findings of the Government board investigating the rail wage situation. In August an agreement was reached by the western coal operators and the local branches of the United Mine Workers under which the mining of coal was resumed in Alberta and British Columbia. An appeal for political equality for the 1,200 Hindus resident in Canada was made by the Hon. V. Scrinivassa Sastri, member of the Council of State of India. "Rightly or wrongly," said Dr. Sastri, "many of the young men of India find in the failure of Canada and other countries to extend to the Hindu resident within their boundaries full citizenship, an evidence that their nationality will not be accorded the full privileges of membership in the British Empire. This is not the sole cause of political agitation in India, but it has been made an important one, and frequent references have been made to the fact that in Canada the Hindu is forbidden the franchise, whether or not he is a British subject.

"With the extension of the franchise in India, and the further development of that country as an integral part of the British Empire, it is rather puzzling to those who are now taking their first steps in political freedom to find that in the most important Dominion the man freely recognized as a British subject is barred from the franchise. From this it is argued that the white man is not willing to give full liberty to India. That adds another difficulty in the way of those of us who believe in the British connection."

The Dominion secured the consent of the British Government to negotiate directly with the United States Department of State on the framing of a new treaty regulating the naval strength on the Great Lakes. Preliminary exchanges were initiated with Washington and an agreement resulted to dispense entirely with naval vessels on the Great Lakes and to replace those in commission there with revenue cutters. The questions relating to fisheries, waterways and smuggling were reserved for separate treatment. Several restrictions on immigration to the Dominion were removed during the year and the Australian plan of selective and financially assisted desirables was adopted. On 2 November it was announced in Washington that Canada was to send there an official diplomatic representative to the United States with the probable title of High Commissioner. On 8 November completed plans for wireless stations in the Arctic were announced. Stations are to be established at Fort Smith, Resolution, Simpson, Norman and McPherson and Dawson City.

Sir Henry Thornton, general manager of the Great Eastern of England, was made president of the Canadian National Railways, now including the Grand Trunk system. During the summer the Governor-General, Lord Byng, made a tour of the western Provinces of the Dominion, visiting over 50 cities and towns and spending almost a month in the Yukon. A proposal was mooted in western Ontario in the closing months of the year for a plebiscite to decide on the partition of Ontario, forming a new Province of Western Ontario, which would include the districts of Thunder Bay, Rainy River and Kenora. A number of Roman Catholic churches and other buildings were burned during 1922 under circumstances pointing to incendiary action of certain groups of religious bigots. The Dominion Government appeared greatly concerned over the affair.

CANALS. A number of important canal projects were launched during the year 1922. The most important from an international point of view was the plan to render the Saint Lawrence River navigable by ocean-going vessels up to the Great Lakes. In brief this project is to deepen and broaden the stream at some points between Montreal and Lake Ontario, and to construct dams and locks at others. The construction of the dams is by far the most costly part of the project, but the heads of water thus obtained would render possible the development of approximately 4,000,000 horsepower. The estimated cost of dams, locks and power-houses is \$250,000,000. The Joint Waterways Commission, representing both Canadian and American interests, recommended that the cost of all navigation works be apportioned between the two countries on the basis of the benefits each will receive in the shape of increased foreign and coastwise trade and development of resources. The cost of works for the combined use of navigation and power is to be apportioned separately and equally. In Canada the project was strongly favored in Ontario and as strongly opposed by the Province of Quebec. In the United States the Middle Western and Northwestern States favored the project, while the Eastern States, especially New York opposed the plan. As the year closed the plan bade fair to become a major political issue in 1923 and on both sides of the border. For the Middle Western States an alternative plan was that of a canal connecting the Great Lakes with the Gulf of Mexico. At the close of 1922 approximately only a strip of 64 miles remained to be dredged, excavated and deepened and the necessary locks constructed, all within the State of Illinois, to make the Lakes to the Gulf waterway an accomplished fact. The waterway from Lake Michigan is complete to Joliet, Ill., via the Chicago River and the drainage canal and from La Salle, Ill., the Illinois River is navigable to its confluence with the Mississippi, thus leaving only the 64-mile link between Joliet and La Salle upon which construction has yet to be completed. Work on this was commenced during the year. On 1 December the Governor of Illinois approved the plans for five locks—two with a greater lift than any in the Panama Canal—which will raise and lower tugs and barges a total of 123 feet. This waterway will not af-

ford ocean-going vessels ingress to the Great Lakes, but will afford an outlet by water for the produce of the midwestern States cheaper than that afforded by the trunk line railways.

During 1922 the Congress of the United States refused to purchase the Cape Cod Ship Canal for \$9,000,000. Congress also refused to expend \$33,500,000 for the deepening of the East River at New York. In Canada a company was organized with a capital of \$15,000,000 to further the construction of a short-cut canal between Lake Huron and Lake Erie, crossing the southwestern peninsula of Ontario from Port Franks to Port Stanley. The plans of the company also contemplate a waterway from Montreal up the Ottawa River to the city of Ottawa, then by canal across country to Prescott, thence up the Saint Lawrence to the Great Lakes. In New Jersey the old Morris Canal passed to the control of the State by agreement with the Lehigh Valley Railroad. Of the larger canal projects in the United States was the widening and deepening of the Chesapeake and Delaware Canal. Eight million dollars are being spent on this project by the Government of the United States to make it a genuine passageway for ships of large size between the two largest bays on the Atlantic Coast, the Delaware and Chesapeake. It is expected that the new waterway will be completed by 1926.

In Europe, the city of Paris planned a perfected canal system which would also obviate the danger from floods. The deepening of the Seine at given points coupled with the demolition of old bridges here and there are among the contemplated improvements. An abnormal rise of the Seine has had at times a very destructive effect on river commerce and has also flooded the capital. With a perfected canal system, the river in rainy seasons would be under control. On rising to a certain height the water would, according to the plan drain into great reservoirs, which, during times of drought, could be made to feed the canals. Hydroelectric development is also a part of the plan. In Holland the construction of a new lock at Ymuiden went onward to completion. This lock is one of the largest in the world. Its dimensions are: Length, 400 metres; width, 45 metres, and draught, 15 metres. The lock will admit the largest ocean-going vessels to the port of Amsterdam. The entire cost of deepening the channel and constructing the great lock is 30,000,000 guilders.

In Italy there was projected a trunk system of canals joining Lake Maggiore with the Adriatic Sea and serving all the intensely industrialized areas of Northern Italy, besides affording a new means of approach to Switzerland from Venice and Trieste. Proposals in 1922 called for a canal from Turin to Milan, with a branch connecting with Lake Maggiore, another from Milan to Lecco and the Lake of Como, and a third from Milan through the Bergamo and Brescia districts to the upper River Mincio, including connections with the Lake of Iseo and Lake Garda.

During the year there was controversy with Germany over the status of the Kiel Canal. The question arose over the refusal of Germany to permit the passage of Allied ships during the

Russian assault on Poland. The Germans claimed that the ships carried munitions for Poland and that since she was neutral the passage would be a violation of international law.

In France, late in December 1922 it was reported that Germany was digging "the most stupendous system of waterways ever undertaken by any nation. The project involved the construction of 1,200 miles of navigable inland waterways—including actual canals and improvement of river channels. For this scheme it was alleged that the sum of 2,000,000,000 gold marks had been set aside. The main object was to place Hamburg ahead of all other European seaports by making it the terminus of a network of waterways that will bring it within easy reach not only of all parts of Germany, but also of Switzerland, Czechoslovakia, Austria, Hungary, Poland, Russia and the Balkan states. The project is believed to give Germany a huge preponderance commercially over all other European countries since it will give her control over the heart of Europe.

On 6 Feb, 1923 it was reported that the need of another canal connecting the Atlantic and Pacific oceans had been a subject of discussion at the President's Cabinet meeting of that date. It was brought up by a report of Secretary of War Weeks showing that all records for tolls from commercial vessels passing through the Panama Canal in January 1923 had been broken when they amounted to \$1,505,285 for the month. It is the opinion of Government officials that at the rate at which traffic through the Panama Canal is increasing another canal will be needed in the comparatively near future. The canal traffic has nearly quadrupled since the opening of this waterway. In January 352 vessels passed through the canal, compared with a monthly average for the six months ending 31 Dec. 1922 of 273 vessels and average monthly tolls of \$1,167,007. It is understood that both another Panama and a Nicaragua route was discussed at the Cabinet meeting. The existing Panama Canal is being used now to 40 per cent of its capacity.

Statistics of United States Canals.—In the United States there are 1,547.17 miles of private or State canals which were built at a cost of \$316,351,329. There are 281.39 miles of Government canals constructed at a cost of \$58,238,594 and 4,385.06 miles of canalized rivers, the deepening of which cost \$108,919,650.

Canal Tonnage.—*New York State Canals.*—The largest tonnage in any year since 1913 passed through the New York State canal system in 1922, according to the report of State Superintendent of Public Works. The tonnage was divided as follows: Barge Canal, 1,485,259 tons; Champlain Canal, 335,814 tons; Cayuga-Seneca Canal, 42,592; Oswego Canal, 9,740; New York City canal terminals, 76,519; Buffalo canal terminals, 38,451. During 1922 there were carried through the Erie Canal between Troy and Buffalo a total of 1,485,259 tons, which constituted an increase over 1921 of 50 per cent. In 1919 the increase was about 25 per cent, and in 1920 almost 6 per cent. In spite of the industrial depression in 1921, the freight transported through the Erie Canal advanced over 11 per cent.

Soo Canals.—Freight movement through the Soo Canals during the navigation season of 1922 amounted to approximately six times the tonnage handled through the Panama Canal in a like period. The total for the season was reported as 66,067,258 net tons, while 10,419,125 net tons passed through the Panama Canal during the first seven months of last year. See also PANAMA CANAL.

CANARY ISLANDS, an insular group lying off the northwest coast of Africa and belonging to the kingdom of Spain with which for administrative purposes it forms a single unit. The area of the islands is 3,342 square miles with a population of 506,414. The capital of the group is Santa Cruz de Teneriffe (Pop. 73,000). The second largest city is Las Palmas with 70,000 population. There is a succursal of the University of Seville which provides for the higher educational needs of the islands. There are about 4,000 camels used as beasts of burden. A wireless station and submarine cables maintain rapid communication with Spain and the outer world and lines of steamers ply between the islands and Spain. Bananas, potatoes, tomatoes, citrus fruits and wheat are the principal products of the islands and form the basis of the flourishing export trade.

CANCER AND ITS CONTROL. That 90,000 people die every year in the United States from cancer is a startling fact, and one which has only recently become fully appreciated. Cancer being a disease which lasts on the average for about two years, there must be at least another 180,000 people in this country suffering from the disease in its earlier stages who will die of cancer in the years 1924 and 1925. The appreciation of these facts, a realization of the widespread ignorance concerning cancer and its curability if taken in time, led in 1913 to the formation of the American Society for the Control of Cancer. This organization's function is outlined in the following extract from its articles of incorporation. It is "to collect, collate, and disseminate information concerning the symptoms, diagnosis, treatment and prevention of cancer; to investigate the conditions under which cancer is found, and compile statistics thereto."

The officers of the Society for the Control of Cancer are: President, (Vacant 1 March 1923 owing to the death of Dr. Charles A. Powers); Vice-President and Chairman of Executive Committee, Dr. Howard C. Taylor; Secretary, Mr. Thomas M. Debevoise; Treasurer, Mr. Calvert Brewer; Field Director, Dr. J. E. Rush; Executive Secretary, Mr. Frank J. Osborne, whose address is, office of the American Society for the Control of Cancer, 370 Seventh Avenue, New York City.

The object of the Society is thus to furnish knowledge concerning cancer to everyone in the United States and Canada. This is a large task, and while the Society has unquestionably reached millions of people, yet the information which is thus spread is of no value unless these people have it so firmly fixed in their minds and so fully appreciate the importance of what has been taught that they act upon their knowledge. While there still remains a vast number of individuals who have either never heard the

Society's speakers or read its pamphlets, nevertheless, it is felt that especially in some of the larger centers of population a very marked influence has been exerted on the more intelligent classes by the cancer propaganda. Surgeons report that many persons are now coming for diagnosis and treatment at a far earlier stage of the disease than ever before. Cancer clinics report that among all patients seeking advice because of the activities of the Society 10 per cent are sufferers from the disease. All this points to the practical value of the Society's work.

There are relatively few things which the average individual should know concerning cancer which are important, and these can be found in the pamphlets issued by the Society, and obtainable from the Executive Secretary on request. In brief they are as follows: that the recorded instances of death from cancer are rapidly increasing in this country; so that the disease after the age of 45 is one of the chief causes of death; that before the age of 40 cancer rarely occurs; that cancer is not due to a germ; that it is not contagious, nor is it a "blood disease," but that it is on the contrary an overgrowth of the cells of the body itself, brought on by long-continued chronic irritation or inflammation. Originally local in its origin and curable if wholly removed, it spreads to the rest of the body if neglected and is then incurable. These statements are now accepted by most authorities as representing our present knowledge.

The artificial production of cancer in man, by such social habits as result in prolonged chronic irritation has demonstrated the effectiveness of this as a cause. But there must be a susceptible soil as well as a suitable irritant. Thus it has been commonly stated that x-ray produces cancer. But x-ray of itself does not directly produce cancer. If, however, the skin is exposed to x-ray for a very long time, usually a matter of years, a chronic, warty, thickening may develop. Only after this skin inflammation has existed for a period of from six to ten years has cancer been known to occur in the damaged area and then in only about 140 persons,—all professional operators of x-ray machines. This is a very small proportion of those whose skin has been damaged by x-ray and hence the disease appears only in persons very susceptible to cancer. Such cancers will not occur in the future because the operator and patient is now carefully protected from excessive exposure to x-ray.

If then cancer is a growth of the patient's own body, its nature and structure must resemble the part of the body from which it comes, and this is true, for cancer of the liver looks and acts and grows like liver tissue; cancer of the skin looks like skin, and so on. If cancer then is like the tissue from which it sprang it is evident that we are not likely to find any serum or medicine which will cure the cancer, because such medicine or serum would also kill the corresponding healthy tissue. Nor will any diet influence the growth favorably. It is therefore necessary to fall back upon cutting out the cancer at an early stage, before it has spread to the rest of the body, and this is believed at

the present time to be on the whole the best and most satisfactory method of curing cancer. It is the only means of cure which can show a large series of patients whose tumors have been accurately diagnosed with the microscope, and who have been followed for a period of five to ten years to demonstrate absolutely that they have had no return of the cancer. Neither x-ray nor radium can show such an extensive record as surgery, though it is possible these agents will become much more effective as our knowledge of their action increases. It is therefore a rule that all cancers which can be removed by surgical means should be so treated. If they can not be removed, their growth should be checked by the use of x-ray or radium. Which is to be used depends upon the situation, the extent, and the nature of the individual tumor. It has been estimated that if this rule were strictly applied, and that if people came to a surgeon when their cancer was at an early stage, which is the only time when a cure is possible, at least 20,000 lives could be saved per annum in the United States.

People frequently ask, is cancer hereditary? It is not. There is no evidence at the present time that there is any hereditary transmission of the disease in man. Unquestionably families occur in which a large number of cases of cancer appear, but this is almost certainly due to the fact that the liability to the disease is transmissible. But if these people who are liable to cancer avoid all irritation, they are not likely to have cancer, because the cancer itself is not inheritable. A similar family liability has long been known to exist to tuberculosis.

Those whose families have a history of a large number of cases of cancer should see to it that after the age of 45 they are examined at least once a year by a competent physician in order to see that no cancer is present, or if one is discovered, to recognize it at a time when it is curable by operation.

FRANCIS CARTER WOOD,
Director, Institute of Cancer Research, Columbia University.

CANDIA. See CRETE.

CANDY AND CONFECTIONERY.

This industry felt the hard times in full measure. Manufacturers, jobbers and retailers all suffered, and fully 6 per cent of failures were scored per year for the three years ending in December, 1922. More jobbers disappeared from business than from either of the other branches of the trade. An estimate of conditions in 1921 showed \$750,000,000 invested in candy and confectionery and ice cream trade, and that \$37,000,000 was paid in taxes to the government. During the war period the industry lost by reason of the high price of sugar, and when the drop came, their own prices followed so promptly that no profit was generally made. Many manufacturers closed down wholly or in part in 1920 and 1921, so that in 1922 there was little stock ahead, resulting in much better feeling at the opening of 1923, when good business was expected. The trade is well supplied with associations, the Western Jobbers Confectionery Association and Associated Retail Confectioners and Western Confectionery Salesmen all being active. The per capita con-

sumption of candy increases, being now 13 pounds, but export decreases having fallen off perhaps three-fourths from the \$9,000,000 export of 1919.

CANE SYRUP. Syrup produced from the sugar cane crop of 1922 was estimated by the United States Department of Agriculture at 41,141,000 gallons, as compared with the 1921 production of 41,167,000 gallons and the 1920 production of 38,986,000 gallons. The foregoing estimate, it was stated, includes the sugar-cane syrup produced in the Southern States which grow that crop but does not include molasses produced as a by-product of sugar. Of course, sorghum syrup, which is a different product, also is excluded. The total sugar cane area in the eight States referred to was estimated at 521,000 acres, of which 212,800 acres were used for syrup. The rest of the crop, it was stated by the Department of Agriculture, was used for sugar or for chewing, or will be used for planting new acreage. By States the amount in gallons of cane syrup produced in 1922 was as follows: South Carolina, 1,288,000; Georgia, 7,040,000; Florida, 4,800,000; Alabama, 11,937,000; Mississippi, 7,040,000; Louisiana, 6,020,000; Texas, 2,485,000, and Arkansas, 531,000. The production of molasses, a by-product of sugar, in Louisiana was estimated at 20,420,000 gallons for 1922 as compared with 25,423,000 gallons produced in 1921 and 16,857,000 gallons produced in 1920.

CANNING AND PRESERVING. This industry held its own during the hard times of 1921 and first half of 1922, and since then has been in a healthy condition. The obvious reason is that canned fruits, vegetables, fish and oysters have become such a necessity for household and restaurant use, that they cannot be dispensed with, for people must eat. There are over 3,000 fruit and vegetable canneries in the United States, 410 fish canneries, and 65 devoted to oysters. In addition over a hundred concerns put up dried fruits and 150 make canned soups. The normal annual production of all these is nearly \$500,000,000, but even the census figures never can be accurate, and the total of one year may be composed of considerably different edibles than the next year. The reason for this is the variability of the crops. For instance, in 1921, the tomato crop was very light, and most of it was conserved fresh, leaving little for the canners to put up. It is excess crops that find their way to the canning factory, to save them. One of the reasons for the high prices of canned goods in 1919 and 1920 was the great cost of the tin cans. But cans dropped about 25 per cent in 1922, and sugar also was low, so that canned goods were again found on the grocer's shelves at prices varying from 50 to 100 per cent above prewar figures. Exports of canned foods from the United States in 1922 totaled 518,285,760 pounds. Canned fruits exported amounted to 207,000,000 pounds; canned milk, 187,496,000 pounds; canned vegetables, 44,644,000 pounds. For canning crop averages, see HORTICULTURE.

CAPE COD CANAL. See CANALS.

CAPE OF GOOD HOPE PROVINCE, an original province of the Union of South

Africa, formerly known as Cape Colony. It occupies the southern extremity of the African continent, has an area of 276,966 square miles and a population of 2,781,185 in 1921. The European or white population is 651,554, the remainder colored. The chief cities, with their populations in 1921, are: Cape Town, white population, 112,548; Port Elizabeth, 25,940; Kimberley, 18,225. The province is divided into the province or colony proper and the native territories of East Griqualand, Tembuland, Transkei, Walfish Bay, Pondoland and Bechuanaland. Of the colored races, about 23,000 are Malays, the remainder being Hottentots, Kaffirs and Bechuanas but the largest colored element is a mixture of the various races, which mixture now numbers over 400,000. The province has 4,734 aided schools with 9,939 teachers and 121,475 European pupils and 146,128 non-European pupils. The province expends about \$10,000,000 yearly on education. Of the total population 1,500,000 profess the Christian faith, the Dutch churches having the largest number of adherents. The provincial revenue aggregates \$5,000,000 yearly, which sum is supplemented by a subsidy from the Union of about \$6,000,000. The provincial administrator in 1922 was Sir Frederic de Waal. For government and relations with the Union of South Africa, see article on the last named.

CAPE VERDE ISLANDS, 14 islands belonging to Portugal and located off the west coast of Africa, and administered by a Governor. Praia is the capital. The area of the group is 1,517 square miles with a population of 149,793 at the last census (1912). Of this population, 4,799 were returned as whites, 51,509 as negroes and 87,621 as colored. Coffee, hides, raw drugs, and wheat are the chief products. The public revenue in 1922 was estimated at 2,783,196 escudos. The foreign trade in normal years is about 8,000,000 escudos of which two-thirds are imports (escudo=\$1.08 at par in American currency but in 1922 had greatly depreciated).

CAPEN, Samuel Paul, American educator: b. Somerville, Mass., 21 March 1878. His father was the late Elmer Hewitt Capen, president of Tufts College, 1875-1905. He received the degrees of A.B. and A.M. from Tufts College in 1898; the degree of A.M. from Harvard University in 1900, and the degree of Ph.D. from the University of Pennsylvania in 1902. Lafayette College conferred the degree of LL.D. upon him in 1920 and in 1921 Tufts College awarded him the degree of L.H.D. He was instructor, assistant professor, and professor of modern languages at Clark College, Worcester, Mass., 1902-11; professor of German in the same institution and lecturer on educational administration in Clark University, 1911-14. From 1908-11 he served as president of the Worcester Public Education Association and was a member of the Worcester School Board, 1908-14. During the latter year he resigned as a member of the Clark College faculty to go with the United States Bureau of Education in Washington as a specialist in higher education. This latter position he held until 1919 when he was chosen as the first director of the American Council of Education. In the fall of 1922 he was elected

chancellor of the University of Buffalo. Doctor Capen served as executive secretary of the Commission on Education of the Council of National Defense in 1917, as a member of the advisory board of the War Department on education and special training, 1918-19; as a member of the advisory commission of the educational bureau of the Young Men's Christian Association, 1918; was made a member of the division of educational relations of the National Research Council in 1918, and a year later was made a member of the advisory board of the War Plans Division of the General Staff. In 1920 he became secretary of the Educational Research Committee of the Commonwealth Fund. He is vice-president in America of the British Society for Experiment and Research in Education, trustee of the American University Union in Europe, a member of the National Institute of Social Sciences, member of the National Economics League, member of the Society for the Promotion of Engineering Education, member of the National Educational Association, and member of the National Dante Committee. He has published 'Lessing's Nathan der Weise' (1914); 'Opportunities for Foreign Students at Colleges and Universities in the United States,' 'A Survey of the University of Oregon' (1915); 'Recent Movements in University Administration' (1916); 'Reports of Surveys of Higher Institutions in Washington and Nevada' (1916-17); 'Resources and Standards of Colleges of Arts and Sciences' (1918); also bulletins of United States Bureau of Education, and numerous articles in educational periodicals. He became editor of the *Educational Record* in 1920.

CAPITAL UNIVERSITY, a Lutheran co-educational institution, founded in 1850 and located at Columbus, Ohio. In 1922-23 it had a faculty of 29 members, an enrollment of 325 in academic work (300 men and 25 women), and 240 in the music school; property valued at \$800,000 and an income of \$75,000. Otto Mees, D.D., is president.

CARBON DIOXIDE, Manufacture of, for Soda Fountains. See CHEMICAL MANUFACTURING.

CARBON TETRACHLORID, Medicinal Use of. See MEDICINE AND SURGERY, ADVANCEMENT OF.

CARINTHIA, a province of the republic of Austria and formerly a crownland of the dual monarchy of Austria-Hungary. It is bounded north by Salzburg and Styria, south by Carniola, Gorizia and Venetia, east by Styria and west by the Tyrol. The area of the province including the plebiscite district which on 13 Oct. 1920 decided to remain in Austria, is 3,684 square miles. The population at the census of 31 Jan. 1920 was 366,589. Over 75 per cent of the population is German-speaking. Klagenfurt is the capital. It has a population of 26,000. The government is vested as regards local matters in a provincial assembly at the head of which is the provincial committee chosen by the assembly.

CARLETON, William T., American opera singer: b. 1849; d. Flushing, Long Island, 25 Sept. 1922. He was the founder of a noted musical organization, the Carleton Opera Com-

pany, and appeared in operas with many of the foremost stars of his day. He was in the original casts of 'Claude Duval' and of the opera 'Rip Van Winkle' in the 80's. He sang in various grand opera companies besides that of his own organization, among them the Adama Opera Company at the Academy of Music, where the Wagner operas were sung in English.

CARLETON COLLEGE, a Congregational and Baptist co-educational institution, founded in 1866 and located at Northfield, Minn. In 1922-23 it had a faculty of 71 members, 860 students, property valued at \$3,200,000 and income of \$750,000. Donald John Cowling, LL.D., is president.

CARNEGIE CORPORATION OF NEW YORK, the last trust created by the late Andrew Carnegie for the support and development of institutions previously established by him and to provide an endowment, the annual income of which will be available generation after generation for such purposes as the trustees might deem most significant. The first complete report of the Corporation was made 4 Feb. 1923. It showed expenditures since the organization of the Corporation in 1911 of \$57,939,846. The assets of the Corporation on 1 Oct. 1921, the report stated, totaled \$131,819,143. It was stated that the assets will be increased by \$10,000,000 when Mr. Carnegie's estate is settled. The income in 1922 was \$6,466,516. In the report referred to Dr. Henry S. Pritchett, acting president of the Corporation, discussed frankly the dangers of wholesale giving and the accumulation of large sums of money in trust for general and specific purposes. The following summary of expenditures of the Corporation for the years 1911-22 was made public: Carnegie institutions, \$23,415,031; public library buildings, \$12,292,549; colleges and universities, \$8,357,515; educational agencies engaged in war work, \$3,145,000; Church Peace Union, \$2,125,000; civic, social and educational agencies, \$1,855,184; church organs, \$1,717,727; research (including schools and colleges), \$1,511,732; Teachers' Insurance and Annuity Association, \$1,026,621; administration, \$966,915; secondary schools, \$919,075; pension systems, \$474,744; simplified spelling board, \$110,000; administrative investigations, \$21,749.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE. See PEACE AND ARBITRATION, INTERNATIONAL.

CARNEGIE INSTITUTE OF TECHNOLOGY, a non-sectarian educational institution, founded in 1900 by the late Andrew Carnegie, and located at Pittsburgh, Pa. It offers courses for men only, courses for women only and courses for both men and women. In 1922-23 it had a faculty of 281 members, 4,009 students (2,343 in day classes and 1,666 in night classes), property valued at \$6,000,000 and an income of \$1,370,000 including tuition fees. Thomas Stockham Baker, A.B., Ph.D., was acting president in February 1923.

CARNEGIE INSTITUTION OF WASHINGTON. An institution founded by the late Andrew Carnegie on 28 June 1902 and endowed by him for the purpose of encouraging "in the broadest and most liberal manner investigation, research and discovery, and the application of

knowledge to the improvement of mankind." During the year 1922 the institution published directly 24 volumes, totaling 6,605 pages. In addition, it issued numerous articles on various subjects which were printed in a large number of journals.

At an annual meeting of the board of trustees of the institution held in Washington on 15 Dec. 1922 appropriations totaling \$1,364,647 were authorized. Of this sum allotments to the departments and divisions of research totaled \$927,662. At this meeting Cleveland H. Dodge resigned as secretary of the board and as a member of the executive and finance committees. Dr. Charles D. Walcott also resigned at the same meeting as a member of the executive committee. W. Cameron Forbes was elected secretary of the board, thus becoming an ex-officio member of the executive committee; and John J. Carty was elected a member of the executive committee for the unexpired term of Doctor Walcott. William Barclay Parsons also was elected a member of the finance committee for the unexpired term of Mr. Dodge. The board of trustees as constituted on 15 Dec. 1922 was as follows: Robert S. Brookings, John J. Carty, W. Cameron Forbes, Charles L. Hutchinson, Henry Cabot Lodge, Andrew J. Montague, James Parmelee, William Barclay Parsons, Stewart Paton, Henry S. Pritchett, Elihu Root, Martin A. Ryerson, Charles D. Walcott, William H. Welch, Henry White and George W. Wickersham. John C. Merriam was president of the institution. Receipts for the year totaled \$1,345,530.49; expenditures, \$1,370,537.87. Receipts of the institution from its founding to 31 Oct. 1922 totaled \$21,831,544.38; expenditures, \$21,510,698.04.

CAROLINE ISLANDS, former German possessions in the Southern Pacific under a single administration with German New Guinea. The islands are now under mandate to Australia. See **NEW GUINEA**.

CARRIAGE AND WAGON INDUSTRY.

The phenomenal growth of the automobile industry is principally responsible for the steady decline of carriage and wagon building. Those makers of horse-drawn vehicles that have saved themselves have mostly gone into the manufacture of automobile tops or parts. In 1919 the establishments engaged in this industry turned out 608,833 vehicles of all kinds valued at \$56,174,000. In 1921 production dropped to 107,273 vehicles valued at \$12,175,000.

CARROLL, B. Harvey, United States consul: b. Waco, Texas, 3 March 1874; d. 30 March 1922 in a hospital at Gibraltar. He received the degree of B.A. from Baylor University 1892; the degree of LL.D. from the University of Texas 1894; Th.M. from the Southern Baptist Theological Seminary, Louisville, Ky., 1899 and Th.D. 1900. During the summer of 1899 he studied at the University of Chicago. He held the degrees of M.A. and Ph.D., magna cum laude, from the University of Berlin (awarded in 1902). From 1902-04 he was head of the department of history and political economy at Baylor University; he also served on the editorial staff of the *Houston Chronicle* 1906-14. On 24 April 1914 he was

appointed American consul at Venice, Italy, and received the Italian War Cross for valor. During the World War while a representative of the American Red Cross, he established the first relief stations, first free kitchens and first hospital of American Red Cross in Italy. At the time of his death he was the United States consul at Cadiz, Spain. He published: 'Die Annexion von Texas'; 'Ein Beitrag zur Geschichte der Monroe Doctrin' (thesis) (1902); 'Political History of Europe, 1815-1848'; 'The High Priest of the Lost Temple.'

CARROLL COLLEGE, a Presbyterian co-educational institution, located at Waukesha, Wis. In 1922-23 it had a faculty of 16 members, 300 students, property valued at \$1,050,000 and an income of \$85,000. William A. Ganfield, LL.D., is president.

CARSON, Sir John Wallace, Canadian army officer and business man: b. Montreal, Canada, 13 Oct. 1864; d. there, 13 Oct. 1922. He was one of Canada's leading business men, but had always taken a keen interest in military matters. He was educated at the Montreal schools, and began his business career with the Royal Insurance Company, passed to the Northern Company, and from 1887 to 1892 was manager of the Fire Department Insurance Company of North America. He then started for himself as insurance and financial agent and broker, and in 1907 he consolidated his interests in the Crown Trust Company, which he founded in that year. He was a director of the Union Bank of Canada and director of various milling, mining, asbestos and smelting companies. He served in the Canadian militia for 39 years; and, when the World War broke out, he went overseas as a representative of the minister of militia and defense, and did notable work in organizing the arrangements for the Canadian Expeditionary Force. In 1915 he was promoted to brigadier-general, and in 1916 to major-general, and received a knighthood, the C.B., and the Russian Order of Saint Stanislaus of the first class. In addition, he held the Canadian Long Service Decoration, and had been active in support of the Dominion Rifle Association and the Boy Scout movement.

CARSON AND NEWMAN COLLEGE, a Baptist co-educational institution, founded in 1851 and located at Jefferson City, Tenn. In 1922-23 it had a faculty of 27 members, 414 students, property valued at \$313,260 and an estimated income of \$108,275. Oscar E. Sams, LL.D., is president.

CARTHAGE COLLEGE, a non-sectarian co-educational institution, founded 10 Jan. 1870 and located at Carthage, Ill. In 1922-23 it had a faculty of 30 members, 326 students, property valued at \$500,000 and an income, including dormitory account, of \$107,000. Harvey Daniel Hoover, Ph.D., S.T.D., is president.

CARY, Henry Nathaniel, American journalist: b. Racine, Wis., 11 Feb. 1858; d. Chicago, 23 Nov. 1922. He was educated in the public schools of La Cygne, Kan., where, on *The Journal*, he began his newspaper career by learning the printers' trade. In 1876 he moved to Milwaukee, where he rose in six years from reporter on *The Sentinel* to managing editor. He became managing editor of *The Chicago*

CASE SCHOOL OF APPLIED SCIENCE — CATHOLIC CHURCH

Times in 1889 and continued in that capacity until three years later, when he became western manager of the Associated Press. A year later he became managing editor of The New York *Times* and remained in that capacity until September 1896. Then followed service on The Saint Louis *Post-Dispatch*, in charge of the New York *World* staff of correspondents in New Cuba during the Spanish-American War; New York *Verdict*, The New York *Morning Telegraph*, Detroit *Free Press* and The Saint Louis *Republic*. He resigned from the *Republic* in 1911 to accept the position of general manager of the Chicago Newspaper Publishers' Association, which position he held at the time of his death.

CASE SCHOOL OF APPLIED SCIENCE, a non-sectarian educational institution for men, founded in 1881 and located at Cleveland, Ohio. In 1922-23 it had a faculty of 62 members, 637 students, property valued at \$4,267,126.14 and an income of \$320,144.67. Charles Sumner Howe, LL.D., is president.

CASSIA, OIL OF. See **FOOD STANDARDS, FEDERAL.**

CATHOLIC CHURCH, Roman. The outstanding event of the year, in the Catholic Church, was the passing of the "frail and gentle Pontiff," Benedict XV. His death roused general interest and was marked by universal sympathy. He became Pope in September 1914, and during his pontificate saw the horrors of a war in which millions of his spiritual children were engaged on both sides. He had a difficult part to play. That he dealt fairly with both sides may be inferred from the fact that each side accused him of favoring the other during the struggle, and both acclaimed him as a friend when he died. The Washington *Post* said editorially: "Toward the United States Benedict always entertained and displayed the most kindly feelings. By his communications to Presidents Wilson and Harding, by his reception of the former at the Vatican, and in a variety of other ways during and since the war he showed his recognition of the greatness and importance of this country. He was intensely interested in Ireland. The statue erected to him in Constantinople . . . sufficiently proves the opinion entertained of him in the Orient." He died 22 Jan. 1922. It was about noon 6 February when Cardinal Bisleti announced to the multitude, assembled in the Piazza di San Pietro, the election of a new Pope, Cardinal Ratti, who had taken the name of Pius XI. The announcement was soon followed by the appearance of the new Pope at the outer balcony of the Basilica, to give his blessing to the people. This was a departure from recent custom and a return to the more ancient one, observed in the days when the Pope was temporal ruler of Rome. The action of the Pope was variously interpreted till official statement was made, that the Holy Father intended thus to signify his universal good will and his hope for peace among all peoples. The Pope soon gave evidence of his interest in America. That America might be represented in future Conclaves, he changed the law governing the time of their opening. To Cardinal O'Connell of Boston he thus expressed himself: "You Americans are young in years, but old in wisdom,

worldly prudence and foresight. Your innate qualities of fairness, justice and peace; your great moral and spiritual stability, and your infinite riches make you the hope and anchor-sheet of the world." That Pope Pius intends to interest himself in human welfare generally is indicated by his protest to the Near Eastern Conference at Lausanne concerning the plight of Christian minorities in the Turkish Empire. The Holy See has world-wide interests. This is officially recognized by many governments, which have established diplomatic relations with the Vatican. The 'Annuario Pontificio' (1922), an official publication, gives the following list:

COUNTRY	Sends to Holy See	Receives
Argentina	Minister	Nuncio
Austria	"	"
Bavaria	"	"
Belgium	Ambassador	Internuncio
Bolivia	Minister	Nuncio
Brazil	Ambassador	"
Chile	Minister	"
Colombia	"	"
Costa Rica, Nicaragua and Honduras	Minister from Costa Rica	Internuncio to the three
Czechoslovakia	Minister	Nuncio
England	"	None
France	Ambassador	Nuncio
Germany	Minister	Internuncio
Haiti	"	Nuncio
Holland	"	"
Hungary	"	Internuncio
Jugoslavia	None	None
Luxemburg	Minister	Nuncio
Monaco	"	"
Nicaragua	None	"
Paraguay	Ambassador	"
Peru	Minister	"
Poland	"	"
Portugal	"	"
Roumania	"	"
Russia	Minister surviving from Kerensky government	None
Serbia	None	Nuncio
Switzerland	"	"
Venezuela	Minister	"

Many countries have no diplomatic relations with the Holy See. To some of these the Pontiff sends an Apostolic Delegate. This representative of the Pope is not an accredited minister. He is of the Hierarchy rather than to the government, and his duties are entirely ecclesiastical. There is an Apostolic Delegate to the United States. The present delegate was but recently appointed, Archbishop Pietro Fumasoni-Biondi. He was formerly delegate to India; and later Secretary to the Congregation de Propaganda Fide, in Rome. Other countries which have Apostolic Delegates are: Albania, Australasia, Canada, Constantinople, Cuba and Porto Rico, Egypt and Arabia, Greece, India, Japan, Latvia, Lithuania and Esthonia, Mesopotamia, Kurdistan and Armenia Minor, Mexico, Philippine Islands, Persia, Syria.

Papal Bulls and Decrees.—The year was not marked by any notable legislation. From time to time, however, circumstances necessitated regulations which concerned particular places rather than the Church in general. There were several decrees regarding missionary provinces in China, Japan and Africa. These effected erection of new Vicariates in some cases, and mere change of boundary in others. There was a change of boundary made, in one instance, in the United States. The counties of Erie, Huron and Richland (in the State of Ohio) constitut-

ing the western part of the diocese of Cleveland, were, in June, detached from that See and made part of the diocese of Toledo. There was also a new diocese created in the United States, the diocese of Fresno and Monterey. The erection of this diocese is of interest in as much as it includes seven of the old Franciscan Missions, among them the famous "Carmel," where Fra Junipero Serra is buried. The General Grant, Sequoia and Yosemite National Parks, and the proposed Roosevelt Park, are also in the new diocese. Monterey was the original diocese of California, and at one time included the whole State. An important decree, in March, changed the time for the opening of the Conclave for the election of a Pope. Formerly the Conclave opened 10 days after the death of the Pope. The time was extended to 15 days, so that American cardinals could arrive in time for the election.

The Society for the Propagation of the Faith is well known to Catholics as an agency for collecting funds to support missionaries. The Society was founded at Lyons 100 years ago. Branches have been established in various countries, including many dioceses in the United States. But the headquarters of the Society remained in Lyons until 1922, when, by a decree of Pius XI, dated 3 May, headquarters were moved to Rome. The practical workings of the Society remain unchanged. Another document of interest to America is a letter of the Pope, dated 25 April, addressed to the American Hierarchy, commending the work of the Catholic University at Washington, D. C. Among other things the Pope says: "Better one university completely organized and equipped than many of stunted growth."

The appointment of new members to the Sacred College, the creation of new cardinals, is always a matter of interest. No American cardinals were created during 1922, but there is persistent rumor that 1923 will see at least two. Cardinal Bonzano, however, one of the new cardinals, is well-known in the United States. As Apostolic Delegate he lived in Washington, D. C., since February 1912. In a public statement issued at the time of his departure for Rome, he expressed the highest admiration for America, her spirit and institutions.

The other new Cardinals are: Monsignor Locatelli, Nuncio to Madrid; Monsignor Rey y Casanova, Archbishop of Toledo; Monsignor Charost, Archbishop of Rennes; Monsignor Tosi, Archbishop of Milan; Monsignor Touchet, Archbishop of Orleans; Monsignor Mori, Secretary to the Congregation of the Council; Father Ehrle, S. J., formerly Vatican Librarian.

From this we see that among the new Cardinals there are four Italian Prelates, two French, one Spanish and one German.

These Cardinals will fill vacancies in the Sacred College. None had been created since June 1921, when the present Pope was made Cardinal. Since then the following Cardinals died: Cardinal Gusmani, Archbishop of Bologna, 24 Aug. 1921; Cardinal Dubourg, Archbishop of Rennes, 23 Sept. 1921; Cardinal de Cabrieres, Bishop of Montpellier, 21 Dec. 1921; Cardinal Almaraz y Santos, Archbishop of Toledo, 24 Jan. 1922; Cardinal di Bonzo, Prefect of the Congregation of Religious, 25 June 1922.

CATHOLIC CHURCH IN UNITED STATES

The Church in the United States is divided into 14 ecclesiastical provinces. There is an Archbishop at the head of each province. The provinces are: Baltimore, Boston, Chicago, Cincinnati, Dubuque, Milwaukee, New Orleans, New York, Oregon, Philadelphia, Saint Paul, San Francisco and Santa Fe. Each province embraces several dioceses. Each diocese has its own bishop. The diocese which the archbishop rules is called the archdiocese or the Metropolitan See; the dioceses of his province are called dioceses or Suffragan Sees. The archbishop, however, has no jurisdiction in the dioceses of his province, except in the special cases stipulated in Canon Law. In all practical matters the bishop is supreme within the territory assigned to him as his diocese. The diocese is subdivided into parishes, which are in the care of priests subject to the authority of the bishop of the diocese.

There are in the United States 14 archdioceses and 89 dioceses. Many of the archdioceses and some of the dioceses have a Bishop Auxiliary. The bishop of Omaha is by title archbishop as he was formerly archbishop of Manila; and when the bishop of Pittsburgh resigned he was made honorary archbishop. There is also one bishop with special charge of the Ruthenian-Greeks.

In the Philippine Islands there are, besides an apostolic delegate, one archbishop and nine bishops. There is a bishop in Porto Rico, and another in the Hawaiian Islands. The following statistics refer only to the United States proper:

Archbishops.....	17
Bishops.....	96
Churches with resident priest.....	10,994
Missions.....	5,621
Secular clergy.....	16,026
Regular clergy.....	6,023

Changes in the Hierarchy during 1922.—

On 8 March 1922, Rt. Rev. A. J. McGavick, D.D. made bishop of LaCrosse successor to bishop Schwebach, who died June 1921.

24 May, Rt. Rev. B. J. Mahoney, D.D., spiritual director at North American College, Rome, made bishop of Sioux Falls, succeeding Bishop O'Gorman, who died September 1921.

27 June, Rt. Rev. M. J. Keyes, S.M., named bishop of Savannah, successor to Bishop Kieley, who resigned on account of poor health.

24 November, Rt. Rev. P. G. E. Nussbaum, D.D., appointed bishop of Marquette, in place of Bishop Eis, resigned.

24 November, Rt. Rev. John J. Swint, D.D. made bishop of Wheeling, W. Va., as successor to Bishop Donohue.

14 December, Rev. Edward A. Mooney of Cleveland, Ohio, succeeded Bishop Mahoney as spiritual director at the American College, Rome.

1 March 1923, Rt. Rev. Daniel J. Curley, D.D., of New York appointed Bishop of Syracuse, N. Y., as successor to Bishop Grimes, who died 26 July 1922.

Missionary activities.—Home Missions.—The missionary strives to propagate religion by making converts. Yet much of the missionary effort, if not most of it, in the Catholic Church

in the United States is spent in caring for those who are Catholics already.

Some mission societies are general in their interests, while others are for restricted fields. The purpose is often indicated by the name. The following is the list given in the 'Catholic Directory.'

"Catholic Church Extension Society"—General offices; McCormick Building, Chicago, Ill. The society has for its object the helping of already existing churches and missions, and the establishing of missions in country districts.

"The Catholic Missionary Union"—Office: Apostolic Mission House, Brooklands, D. C. Its purpose is to engage priests and laymen as missionaries to non-Catholics in the United States, to provide for their maintenance, to distribute Catholic literature, and in every way to assist the bishops in establishing and carrying on home missions in their various jurisdictions.

"International Catholic Truth Society"—Office: 407 Bergen Street, Brooklyn, N. Y. Distributes literature dealing with Catholic doctrine, for the instruction of Catholic and non-Catholic alike.

"Catholic Missionary Aid Society"—Office: 125 North Craig Street, Pittsburgh, Pa. As the name indicates its object is to obtain material help for those engaged in missionary work.

There are three societies devoted to missionary work among the Indians. These are: "Bureau of Catholic Indian Missions"; "Society for Preservation of Faith among Indian Children"; office for both: 1326 New York avenue, N. W. Washington, D. C. "The Marquette League"—Office: United Charities Building, Fourth avenue and 23d street, New York, N. Y.

All missionary activity in the Reservations must have the permission of the government. The Bureau is the representative of the Catholic Church in all dealings with the United States Indian Office. Besides this, the missionaries among the Indians look to the Bureau for the support of the mission schools, and for material aid in establishing and maintaining missions. The Preservation Society collects an annual fee from each of its members for the benefit of the mission; while the League is an auxiliary of the Preservation Society, helping the repair and building of chapels, the support of catechists, scholarships for Indian pupils and other missionary purposes.

"Commission for Catholic Missions among Colored People and Indians"—Office: Saint Mary's Seminary, Baltimore, Md. Collects funds for the work indicated.

There are two societies devoted to work among the colored people. These are: "The Catholic Board for Mission Work among the Colored People." Office: 1 Madison avenue, New York, N. Y.; "Saint Joseph's Society for the Colored Missions." Office: Saint Joseph's Seminary, Baltimore, Md.

The board collects and distributes funds. The funds are collected by way of fee for membership and by appeals in churches throughout the country. They are distributed, through the bishops, according to the needs of each diocese.

The society is composed of priests devoted to work among the colored people. It began in 1871 when four young priests took charge

of a parish for colored people in Baltimore. It has now about 50 priests, in charge of nearly 50 parishes. It conducts besides four educational institutions, two devoted to the preparation of missionaries, and two schools for colored boys. There are, besides, parochial schools attached to the missions.

Foreign Missions.—Many religious orders of men and women send missionaries to foreign lands. Yet these orders are not listed as foreign mission societies, and their statistics are not available. Within the past three years the Dominicans, Vincentians and Passionists have undertaken missionary work in China; and priests belonging to the society of the Divine Word have gone to China from Techmy, Ill.

There are two societies of priests established for, and devoted to, the work of evangelizing China, namely: "The Catholic Foreign Mission Society of America," with headquarters at Maryknoll, near Ossining, N. Y., and "The Chinese Mission Society," with headquarters at Saint Columban's Mission House, Omaha, Nebr. Both of these societies are of recent origin and both are American. While they are quite young, neither being more than a dozen years old, they have begun active work in China, with missionary nuns as well as priests.

The foreign mission depends for funds on some home agency. Among Catholic organizations supplying such funds, we may mention:

"The Society for the Propagation of the Faith"—National Offices: 343 Lexington Avenue, New York, N. Y.

"The Association of the Holy Childhood"—Office: 801 Standard Life Building, Pittsburgh, Pa.

"American Missionary Society of Catholic Women"—Office: Milwaukee, Wis.

"Sodality of Saint Peter Claver for African Missions"—Office: Fullerton Building, Saint Louis, Mo.

It is estimated that these agencies collect \$1,200,000 for the foreign missions. Exact figures are not available; but there is a tendency to co-ordinate effort, and this may result in more definite information.

Meeting of the Hierarchy.—With His Eminence Cardinal O'Connell presiding, the Hierarchy held a meeting at the Catholic University, Washington, D. C., September 27 and 28. A writer in the "Catholic Historical Review" gives this summary of the proceedings:

Continuation of the work of the National Catholic Welfare organization; a committee was appointed to place before the public the stand of the Catholic Church on education; steps were taken for the unifying and systematizing the many mission activities; a resolution was adopted petitioning the Holy See to grant to the bishop of Albany permission to open an informative process of inquiry into the virtues of Kateri Tekakwitha, the Mohawk Indian heroine of sanctity, who was born and baptized 40 miles from Albany, as the first step towards her ultimate canonization.

Of public interest also were the meetings of the National Council of Catholic Women, and of the National Council of Catholic Men. These councils are intended to secure co-operation of existing societies, of Catholic women and men, in matters of national concern.

Education.—The Catholic Church does not condemn the public school. Neither is it opposed to the purpose for which these schools were established. What then is the fundamental reason for the Catholic school? Catholic educators tell us that the Catholic system of elementary schools is based on these principles. (1) The need of religion. The spiritual interests of the child are supreme. Learning, health, ability to make a living are important, and must not be slighted. But, to the Church eternal welfare is most important. (2) The need of moral training. Moral training is best when based on religion. This is particularly true of the moral training of a child. (3) Religion and morality are best taught when associated with secular training. To divorce them from secular education leaves in the immature mind the impression that they are secondary, at least in daily life.

Catholic educators acknowledge the right of the State to see that children are properly educated; but they claim that in the Catholic school the child receives an education at least as good as it would receive in the public school. Patriotism is inculcated; reverence for God and God's laws beget reverence for all duly constituted authority and its legal enactments; religion and morality are bulwarks against radicalism and anarchy, which are the greatest enemies of our country and its institutions.

The organization of the elementary school system is diocesan. The bishop of the diocese is the supreme authority. He legislates for the schools through a school-board. Diocesan superintendents visit the schools, examine the children and the work of the teachers, and report their findings to the board.

Besides the diocesan organizations there is the department of education under the National Catholic Welfare Council. This supplies information to the diocesan boards and superintendents, collects data and co-ordinates the whole system of education, elementary, high school, college and university. It suggests improvements in methods and helps to standardization.

While elementary education in the parochial school is diocesan, many Catholic high schools are in charge of members of the teaching orders, and in large measure independent, and the Catholic colleges and universities are almost entirely in the hands of the religious.

There can be no question of increase in the number of Catholic schools and colleges. Their friends claim an equal advance in equipment and standard of education, and point to successes in public examinations and competitions to prove their claim.

The seminary, for the education of aspirants to the priesthood, is in a category of its own. A college education is a prerequisite for admission; the seminary course occupies six years.

The religious orders train their own members. The secular clergy is trained in the diocesan seminary. These seminaries are under the bishop; he appoints the professors; he is responsible in matters of discipline and economy. There are, however, certain regulations to which all seminaries must conform. These regulations are made by the Sacred Congregation of Seminaries and Studies, in Rome. These determine the course of studies, the methods of

teaching, and exact certain qualifications on the part of the professors. Thus uniformity and standardization are obtained.

The following is a brief summary of the statistics available:

	Total number	Faculty number	Students
Universities.....	16	2,000	19,802
Seminaries.....	51	1,063	6,667
Colleges.....	114	1,697	13,996
High schools.....	1,552	7,927	129,838
Elementary schools.....	6,551	41,581	1,795,673

References.—'Acta Apostolicæ Sedis' (Rome), since June 1921; "Catholic Historical Review" (Washington, D. C.), April 1922, October 1922; "Annuario Pontificio" (Rome) for 1922; "Directory of Catholic Colleges and Schools" (Washington, D. C.), 1921; "Catholic Directory" (New York), 1922.

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CATHOLIC EASTERN ORTHODOX CHURCH. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

CATHOLIC SISTERS' COLLEGE, a Roman Catholic educational institution for women, founded in 1911 and located at Washington, D. C. In 1922-23 it had a faculty of 37 members, and 115 students. No information was given as to the value of the institution's property or its income. Rev. Dr. P. J. McCormick, is dean.

CATHOLIC UNIVERSITY OF AMERICA, The, an educational institution of higher learning for men, founded in 1887 and located at Washington, D. C. In 1922-23 it had a faculty of 96 members, 667 students, property valued at \$5,000,000 and an income of \$600,000. Rt. Rev. Thomas J. Shahan, D.D., was Rector during the year indicated.

CATHOLIC UNIVERSITY OF OKLAHOMA. See SAINT GREGORY'S COLLEGE.

CATHOLIC WELFARE COUNCIL, National, an organization founded 24 Sept. 1919 at a meeting of the Bishops of the Roman Catholic Church of the United States, held in Washington, D. C. Its first president was the late Cardinal Gibbons. The National Catholic Welfare Council was established to unify, co-ordinate and encourage all activities of the Catholic Church in America. It is primarily a service organization under the direction and control of the hierarchy. By its service of information, advice, co-operation and assistance, it aims to create a sentiment of national solidarity amongst American Catholics. In the pursuance of this purpose it functions under an Administrative Committee of seven archbishops and bishops which acts as a continuation committee of the general body of bishops between annual meetings. The Administrative Committee of the National Catholic Welfare Council consists of the following archbishops and bishops: Most Rev. Edward J. Hanna, D.D., of San Francisco, Chairman; Rt. Rev. P. J. Muldoon, D.D., of Rockford, Vice-Chairman; Most Rev. Austin Dowling, D.D., of Saint Paul, Treasurer; Rt. Rev. Joseph Schrembs, D.D., of Cleveland; Rt.

Rev. Edmund F. Gibbons, D.D., of Albany; Rt. Rev. Louis S. Walsh, D.D., of Portland, Me., and Rt. Rev. Thomas E. Molloy, D.D., of Brooklyn.

The National Catholic Welfare Council is divided into the following departments:

Executive Department.—The principal function of this department is to supervise the work of the Council as a whole. The General Secretary, the Rev. John J. Burke, C.S.P., represents the National Catholic Welfare Council in Washington on all matters affecting Catholic rights and interests. Under the immediate supervision of this department are the following bureaus:

Bureau of Immigration which deals with the immigration problem in its Catholic aspects. Branch offices are maintained at the ports of New York, Boston, Philadelphia, San Francisco and Seattle.

Bureau of Motion Pictures. This bureau has done effective nation-wide work in preventing the increase in the output of indecent moving pictures.

Bureau of Historical Records keeps an account of all Catholic activities as well as of all Catholic soldiers and sailors who were engaged in the World War.

Department of Education.—The chief purposes of this department are: (1) a clearing house of information concerning Catholic education and Catholic education agencies—for educators, students and the general public; (2) an advisory agency to assist the Catholic educational system in its development; (3) a connecting agency between Catholic activities and government education agencies; (4) an active organization to safeguard the interests of Catholic education. In the pursuit of these purposes, educational surveys and investigations are conducted. The department also issues bulletins, pamphlets and books treating of educational questions.

Department of Press and Publicity conducts a weekly news service for the Catholic press of the United States. It serves 87 Catholic newspapers with up-to-date news gathered by its own correspondents from every part of the world.

Department of Laws and Legislation.—The principal purpose of this department is to keep in touch with all legislation, Federal or State, which in any way affects the interests of the home, the school or the Church.

Department of Social Action.—This department deals with the social and industrial problems of the day and spreads information concerning Catholic ideals in these fields. It operates in three divisions—Bureau of Industrial Relations, Bureau of Citizenship, and a Rural Life Bureau.

Department of Lay Organizations.—All Catholic organizations of men and women are brought together by the two co-ordinate branches of this department, namely, the National Council of Catholic Men and the National Council of Catholic Women. These two organizations are interested in all problems affecting youth, education, immigration, motion pictures, men and women in industry, as well as other questions relating to the well-being of American Catholics.

Some of the important publications of the National Catholic Welfare Council are: 'Fundamentals of Citizenship'; 'Civics Catechism'; 'Catechism of the Social Question'; 'Catechism of Catholic Education'; 'Directory of Catholic Colleges and Schools'; 'American Catholics in the War'; 'Church and Labor'; 'Social Mission of Charity'; 'Social Reconstruction,' and 'The State and the Church.'

JAMES H. RYAN,

Executive Secretary.

CATTLE. See AGRICULTURE IN THE UNITED STATES.

CATTLE TICK. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF.

CAUCASUS, the part of European Russia lying in the extreme southeastern part of the country between the Black and Caspian seas and bordering Asiatic Turkey and Persia on its southern line and extending on the north to the Provinces of the Don Cossacks and Astrakhan. It has an area of 180,843 square miles and a population of 12,000,000. After the fall of the empire in 1917 several independent republics were set up in the Caucasus—Azerbaijan, Georgia, Eriwan, etc., but by the close of 1922 these states were again united with Great Russia. See RUSSIA.

CAYENNE PEPPER. See FOOD STANDARDS, FEDERAL.

CEDAR CREST COLLEGE. See ALLENTOWN COLLEGE FOR WOMEN.

CEDARVILLE COLLEGE, a Reformed Presbyterian co-educational institution located at Cedarville, Ohio. In 1922-23 it had a faculty of 10 members, 109 students, property valued at \$100,000 and an income of \$20,000. Wilbert Rudnick McChesney, A.M., Ph.D., D.D., is president.

CELTIC LANGUAGES. See PHILOLOGY.

CEMENT. According to a preliminary report issued by the United States Geological Survey on 13 Jan. 1923, production of Portland cement in the United States during 1922 totaled 113,870,000 barrels, compared with 98,293,000 barrels produced in 1921. Shipments totaled 116,563,000 barrels in 1922, as compared with 95,051,000 barrels in 1921. Stocks on hand at the close of the years were: 9,134,000 barrels in 1922, and 11,938,000 barrels in 1921. Stocks of clinker or unground cement at the mills at the end of December 1922 amounted to approximately 2,823,000 barrels. These statistics, it was said by the Geological Survey, were based mainly on reports of producers of Portland cement, but in part on estimates, the use of estimates being made necessary by lack of returns from four producers. The Bureau of Foreign and Domestic Commerce of the Department of Commerce reported imports of hydraulic cement from 1 Jan. 1922 to 21 September totaling 151,701 barrels, as compared with 122,317 barrels imported during the 12 months of 1921. Exports of hydraulic cement up to 1 Dec. 1922 totaled 1,020,907 barrels, as compared with 1,181,014 barrels exported during the 12 months of 1921. Further details regarding the production of Portland cement in 1922 were not available 1 Feb. 1923, but statistics compiled by the Bureau of Census for the years 1921 and 1919 show that during the

former year 125 establishments engaged primarily in the manufacture of cement turned out products valued at \$203,627,000, as compared with products valued at \$175,265,000 turned out by 123 concerns in 1919. Persons engaged in the industry, including proprietors, firm members, salaried employees and wage earners, totaled 30,907 in 1921, compared with 30,247 in 1919. Salaries and wages paid amounted to \$44,959,000 in 1921, as compared with \$42,691,000 in 1919. Materials used cost \$102,360,000 in 1921; compared with \$79,510,000 in 1919. The total production of cement of all kinds in 1921 was 99,063,000 barrels, valued at \$184,801,000, compared with 81,307,000 barrels, valued at \$138,714,000, produced in 1919. As shown above, the production of Portland cement in 1921 was 98,293,000 barrels, which was valued at \$183,808,000, an average of \$1.87 per barrel. Of the total production of 1919, 80,778,000 barrels were Portland cement. This output was valued at \$138,130,000, or an average of \$1.71 per barrel.

CENSUS. The Act of Congress, approved 3 March 1919, the full title of which was "An act to provide for the Fourteenth and subsequent decennial censuses," designated the three years beginning on the first day of July next preceding each decennial census as "the decennial census period," and provided for an expansion, during that period, of the force of the permanent bureau at Washington, and for the creation of a special field force to collect the census data. The principal subjects covered by the Fourteenth Census were the same as those provided for by the Thirteenth Census Act, namely, population, agriculture, manufactures and mines and quarries (including oil and gas wells). In addition an inquiry on forestry and forest products was provided for, and the census of agriculture was broadened to include the subject of drainage and a more detailed inquiry regarding irrigation than had been made in 1910. The data collected by the enumerators of the Fourteenth Census will be found in the articles on the UNITED STATES, the several States, industries, etc. (qq.v.).

CENTENARY COLLEGE OF LOUISIANA, a co-educational institution, founded in 1839 and located at Shreveport, La. It is owned by the Methodist Episcopal Church, South, but controlled by board of trustees, members of which are not required to be members of the Methodist Church. In 1922-23 it had a faculty of 24 members, 350 students, property valued at \$1,205,780.98 and an income of \$175,000. George S. Sexton, D.D., is president.

CENTRAL AMERICAN CONFERENCE. A conference of representatives of Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica, held at Washington, D. C., 4 Dec. 1922 to 7 Feb. 1923, and participated in by representatives of the United States government. The outstanding feature of the conference was the adoption of a convention limiting for a period of five years (except in case of civil war or impending invasion by another state), the number of enlisted men in the standing armies and national guard of the participating countries as follows: Guatemala, 5,200; El Salvador, 4,200; Honduras, 2,500; Nicaragua, 2,500; Costa Rica, 2,000. It was stated that in adopting these armament limitations, the

convention took into consideration the relative population, area, extent of frontiers and various factors of military importance. The convention further binds the contracting parties to establish a national guard organization in accordance with the most efficient modern methods and for this purpose it was stated they will consider the employment of foreign officers as instructors. The contracting parties further agreed to furnish one another, semi-annually during the life of the convention, full reports of the measures adopted by each government for the execution of the convention.

The conference also adopted a general treaty of peace or amity embodying those provisions of the Treaty of 1907 which had been found to be of practical value in furthering friendly relations among the Central American states. Among its features may be mentioned a declaration to the effect that the violent or illegal alteration of the constitutional organization of any one of the Central American states is a menace to the peace of all. It also binds each state not to recognize in another a government resulting from a coup d'état or a revolution against a recognized government of a person constitutionally disqualified from holding office. Other provisions include the obligation, in case of civil war, not to intervene in favor of or against the government of any republic; the obligation to seek constitutional reforms, which would make impossible the re-election of a president or vice-president; the obligation on the part of each government not to intervene in the internal political affairs of any other republic and not to permit, within its territory, the organization of a revolutionary movement against the recognized government of any other Central American republic, and finally an obligation not to enter into secret treaties.

The conference also adopted a convention for the establishment of an international Central American tribunal, replacing the convention of 1907 which established the Central American Court of Justice. The new convention provides for a tribunal to which shall be submitted all controversies arising among the Central American republics, which it has been found impossible to settle through diplomatic channels or by other pacific means, provided that such controversies do not affect the sovereign and independent existence of the nations concerned.

Another convention adopted by the conference provides for the establishment of two permanent international commissions in each republic—one a commission of finance and one a commission on means of communication. These commissions are to prepare practical plans for economic reforms and for the construction of public works.

A fourth convention adopted was a four-power compact for the establishment of free trade, signed by Guatemala, El Salvador, Honduras and Nicaragua. Costa Rica, by the observance of certain formalities, may become a party to this compact if it desires to do so.

Two of the conventions adopted by the conference were six-power compacts, the United States being the sixth signatory. One provides for the establishment of international commis-

sions of inquiry and is a general unification of the conventions which the United States concluded with the other five powers mentioned in 1913-14, establishing international commissions of inquiry. The other six-power compact was in the form of a protocol in which the United States declared its full sympathy with the convention providing for the establishment of a Central American tribunal and stated its willingness to designate 15 citizens to be available for service on the tribunal.

Other conventions adopted were, one providing for the unification of protective laws for workmen and laborers; another relating to the practice of the liberal professions; another relative to the preparation of projects of electoral legislation; another providing for the establishment of agricultural and animal experiment stations; another providing for the reciprocal exchange of Central America students and finally an extradition convention.

Altogether, the conference adopted one treaty, 11 conventions and three protocols. When this treaty and conventions had been signed, the announcement was made that Guatemala and Honduras had decided to submit their boundary dispute to arbitration by President Harding. This dispute has lasted for a number of years and has resulted in much friction. Francisco Sanchez Latour, headed the Guatemala delegation; Dr. Francisco Martinez, the Salvadorean delegation; Dr. Alberto Ucles, the Honduran delegation; Gen. Emiliano Chamorro, the Nicaraguan delegation, and Alfredo Gonzales Flores, the Costa Rican delegation. The American delegates were Secretary Hughes, and Sumner Wells, of the State Department. Secretary Hughes was chairman of the conference. See also PEACE AND ARBITRATION, INTERNATIONAL.

CENTRAL AMERICAN FEDERATION. On 15 Sept. 1921 the republics of Guatemala, Honduras and San Salvador signed the constitution of a new state formed by the federation of the three republics. The other states of Central America were invited to come into the Federation but there developed obstacles of one kind or another which prevented their entrance. The city and department of Tegucigalpa were ceded free to the Federation for its capital and federal district. The constitution provided for a Legislature of two chambers and for a Federal Council in which the executive power should be vested. Before the date (1 Feb. 1922) arrived for the inauguration of the Federation, Guatemala and El Salvador withdrew from the Federation and thereby reassumed their former sovereignty and independence. The chief cause of the collapse of the Federation was the overthrow of the Herrera administration in Guatemala. See articles on the several countries and republics in Central America.

CENTRAL BAPTIST COLLEGE, an educational institution for women, founded in 1892 and located at Conway, Ark. In 1922-23 it had a faculty of 19 members, 175 students, property valued at \$250,000 and an income of \$10,000. Doak S. Campbell, is president.

CENTRAL COLLEGE, a Methodist Episcopal Church, South, co-educational institution,

founded in 1854 and located at Fayette, Mo. In 1922-23 it had a faculty of 15 members, 325 students, property valued at \$1,500,000 and an income of \$75,000. Paul H. Linn, D.D., is president.

CENTRAL HOLINESS UNIVERSITY, a non-sectarian co-educational institution, founded in 1905 and located at University Park, Iowa (railroad station, Oskaloosa, Iowa). In 1922-23 it had a faculty of 19 members, 210 students, property valued at \$500,000 and an income of \$36,823.42. John Lakin Brasher, D.D., is president.

CENTRAL WESLEYAN COLLEGE, a Methodist Episcopal co-educational institution, founded in 1864 and located at Warrenton, Mo. In 1922-23 it had a faculty of 25 members, 370 students, property valued at \$600,000 and an income of \$60,000. Otto E. Kriege, D.D., is president.

CENTRE COLLEGE OF KENTUCKY, a non-sectarian educational institution for men (under Presbyterian auspices), founded in 1819 and located at Danville, Ky. In 1922-23 it had a faculty of 16 members, 300 students, property valued at approximately \$300,000 and an approximate income of \$85,000. R. Ames Montgomery, D.D., LL.D., is president.

CEYLON, a British island colony to the south of Hindustan in the Indian Ocean. It has an area of 25,481 square miles and a population of 4,504,283 in 1921. Divided according to race there were in the colony 3,016,423 Sinhalese, 1,120,478 Tamils, 284,704 Moors, 28,923 Burghers, 13,745 Malays, 8,421 Europeans, 4,402 Veddas and 20,503 non-descript. In addition there were 6,684 persons connected with the military forces and with shipping. Over 60 per cent of the population is engaged in the pursuit of agriculture, over 10 per cent in industrial occupations and the remainder in the trades and the professions. The marriage registration in 1920 was 21,821 (exclusive of Mohammedans); births, 163,719; deaths, 132,955. The urban population is about 15 per cent of the total. The chief cities of the colony are Colombo, 244,100; Galle, 39,000; Jaffna, 42,000; Kandy, 32,000.

Religion.—In 1921 there were 2,770,000 Buddhists, 982,000 Hindus, 302,000 Mohammedans and 440,000 Christians.

Education.—In 1920 there were 895 government schools with an attendance of 124,477; 1,868 aided schools with 197,640 pupils, and 1,350 unaided schools with 27,709 pupils. All of these schools are vernacular schools and there were in addition 278 English schools with 48,127 pupils. Fees are charged in the latter schools but the vernacular schools are free. There are 84 industrial schools and technical students numbered 446 in 1921. The government maintains the Royal College and the Training College. The total outlay on education in 1920 was \$750,000.

Finance.—The budget of Ceylon, submitted 12 Aug. 1922, to the legislative council provides for an increase in both revenues and expenditure. The revenue is estimated at 80,400,000 rupees (\$20,000,000), which exceeds the estimate for 1921-22 by 1,650,000 rupees, and is only 800,000 rupees less than the estimated revenue for 1919-20 — the highest estimate for Ceylon in any financial

year. The expenditures are estimated at 92,509,200 rupees, or 16,020,000 rupees more than for last year, and 741,500 rupees more than the actual expenditure of 1920-21. It also exceeds the estimated revenue of the year 1922-23 by 12,109,200 rupees. The net public debt in 1920 was \$23,836,965, incurred entirely for the construction of harbors, railways, water systems, etc.

Production.—About one-fifth of the area of the colony is under cultivation, or about 3,100,000 acres, while 1,000,000 acres are under pasture. The principal crops are paddy, cacao, cinnamon, tea, cocoanuts and rubber. The exports of tea in 1922 were 171,390,789 pounds, while in 1920 51,000,000 pounds of dried cocoanuts, 135,000,000 pounds of copra, 51,000,000 pounds of cocoanut oil, 88,552,000 pounds of rubber were exported. In the same year there were in the colony 1,598,833 horned cattle, 3,210 horses, 57,497 sheep, 59,070 swine and 155,570 goats. There are over 100 plumbago mines in operation, the exports of which in 1920 amounted to 18,400,000 pounds. Monazite is also produced in commercial quantities, but the gold and thorium deposits have not yet reached the stage of commercial development. There are numerous veins of small gems, such as rubies, sapphires, moonstones. The native manufactures are weaving, basket-making, shell boxes, etc., and earthenware, lacquer work. In addition to these manufacturing industries, which are on a primitive scale, are the large industries dependent on the agricultural products, including 1,154 tea and rubber factories, 120 fibre and cocoanut oil factories, 50 saw mills and about 20 manufactories of ice, aerated water, etc.

Commerce.—In 1920 the exports were valued at \$77,362,731 and the imports at \$101,059,610. The chief imports were enumerated above under production. The chief imports were cotton textiles, rice, coal, sugar, spirits and fertilizer. The most of the tea trade is with the United Kingdom. All imports from America and Canada into Ceylon quadrupled between 1913 and 1919 and in 1920 trebled the 1919 figures. In 1913 Ceylon imported goods valued at \$60,368,249, of which only \$773,341 came from the United States. In 1919 total imports were valued at \$77,636,618, of which \$3,716,156 was American. In 1920 total imports were \$104,221,821 in value, and the participation of American imports was \$14,217,359, or 13.64 per cent of the total, against a percentage of American imports of 1.28 per cent in 1913. It is believed that imports credited to Canada were usually manufactured in the United States and for this reason the two countries are combined in the tables. In 1921, a year of general industrial and commercial reaction, American imports declined to \$3,193,228 in value, slightly under the 1919 figures, but over four times those of 1913. In exports also Ceylon has increased rapidly in importance to American trade. In 1913 the United States and Canada took from Ceylon goods valued at \$12,554,066, out of a total export of \$75,588,656. In 1919 we and Canada took \$39,921,160 worth of Singalese exports, out of a total of \$119,072,570, or 33.53 per cent; in 1920, \$30,104,120 of a total of \$87,089,132 and in 1921, \$22,810,041, or 21.92 per cent of the total exports amounting to \$104,051,467 in value.

Communications.—The colony has 750 miles of railway in operation and several branch lines under construction, 561 post offices, an equal number of telegraph offices and money order offices and 7,600 miles of telegraph wire.

Government.—The government of the colony is vested in a Governor who is assisted by an Executive Council of seven members. These are the Colonial Secretary, Colonial Treasurer, the Attorney-General, the Agent of the Western Province and three nominees of the Governor. To this is added a Legislative Council of 37 members, 11 of whom are elected to represent territorial divisions, two to represent Europeans and one each the Burghers, the Chamber of Commerce and the Low Country Products Association. The remainder are nominated by the Governor. In 1922 the Governor was Brig.-Gen. Sir William Henry Manning, and the Colonial Secretary, Sir Graeme Thomson.

CHAD, a territory of French Equatorial Africa constituting a separate colony since 17 March 1920. It has an area of 501,676 square miles and a population of 2,090,000. Its affairs are administered by a Lieutenant-Governor assisted by an administrative council. The colony has administrative and financial autonomy. The general budget of the colony for the year 1921-22 was 3,850,000 francs. The colony raises large numbers of cattle, sheep, asses, camels, horses and ostriches, but trade is hampered by lack of export facilities.

CHALMOOGRA, or **CHAULMOOGRA**, **OIL**. See MEDICINE AND SURGERY, ADVANCEMENT OF.

CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA.

The operation of the Transportation Act of 1920 engaged much of the attention of the National Chamber during 1922. In the investigations and hearings on railroads and revenues by the Interstate Commerce Commission the Chamber was directly instrumental in arranging for the appearance of the Secretary of Commerce as the spokesman of the public. Mr. Hoover appeared before the Commission on 3 February and there outlined the situation of the railroads from the point of view of the Department of Commerce. His statements gave an unusually effective picture of conditions and contained important suggestions of broad principles designed to solve the problem. The Chamber also was active in opposition to some proposed amendments to the Transportation Act, particularly one to repeal provisions which laid upon the Interstate Commerce Commission duty to fix rates such as would provide an adequate return to the roads, and another to repeal those provisions which increased the authority of the Interstate Commerce Commission over intra-State rates. The Chamber's opposition in these matters was successful.

In connection with the railroad strike of 1922, the Chamber disseminated information giving the outstanding facts regarding the questions at issue; the board of directors commended the statement of President Harding making clear the issues involved in the strike, and the Chamber, through the request of its President, aroused business organizations of the country to support the President of the United States and to secure such local protection and community public

order as would assure every man his right to work without intimidation.

In the coal strike of 1922 the Chamber, through the Coal Bureau of its Natural Resources Production Department, kept the Chamber's membership fully informed of developments and the situation with reference to supplies of coal and its production. The organization members were urged to organize to meet the existing situation and were offered the services of the Chamber in helping to meet particular difficulties. Following the cessation of the strike, the Chamber, at the request of the Government, enlisted the co-operation of its organization members in helping to meet the difficulties due to shortage of coal and transportation through the efforts of industry rather than Government regulation. The Chamber's Coal Bureau gathered important information as to supplies of coal and coal needs which was useful not only to government authorities but to industry generally.

The Chamber supports the policy of an adequate privately owned and operated merchant marine, a subject which was one of the two principal topics at the Chamber's annual meeting in Washington in May 1922. The Chamber's policy includes support of such Government aid as may be necessary to the upbuilding of such a merchant marine, and this policy the Chamber's officers have publicly urged upon Congress. Other fields of transportation include the development and co-ordination of highway and waterway transport. These matters have received the attention of the Chamber's Transportation and Communication Department and a special Committee on Inland Waterways.

In a referendum which closed 21 Jan. 1922, the Chamber became committed to six proposals regarding principles of tariff legislation, including the principle of a flexible tariff and the creation of a Tariff Adjustment Board to administer adjustable rates and also reasonable protection for American industries subject to destructive competition from abroad and of benefit to any particular section of the country. The Chamber's policies in these particulars were placed before Congress with considerable success, particularly in regard to the flexible tariff.

On behalf of veterans of the World War, the Chamber actively supported a national system of reclamation at Federal expense to be carried out for the purpose of affording ex-service men an opportunity to cultivate the soil, and national legislation and appropriations to enable ex-service men to obtain vocational education. The Chamber also actively concerned itself with measures relating to the care of sick and disabled soldiers. To these measures the Chamber was committed by votes of delegates at two annual meetings, reaffirmed through a referendum which closed in February 1922. Through the same declarations and referendum the Chamber was also committed to opposition to the adoption of an indiscriminate Federal cash bonus to all veterans of the World War. As a result, the Chamber took the leadership in opposition to the adoption of such a bonus, which was ultimately defeated.

The development of the National Budget System has been of special interest to the Chamber because the adoption of a budget system was the subject of the first referendum ever held by the

Chamber shortly after its organization in 1912 and because of the Chamber's persistent activities in favor of the passage of a budget act. The Chamber has also advocated reform of the personnel policy of the National Government and has concerned itself with questions relating to government reorganization. It has worked closely with the Department of Commerce through a special committee for the purpose of establishing closer contact between the Department and representative business organizations.

During 1922 it prepared a plan for commercial arbitration, that is, for the adjustment by definitely organized machinery within the National Chamber of commercial disputes by arbitration in domestic as well as foreign transactions and for similar arbitration through local chambers of commerce and trade associations acting for themselves.

Soon after the completion of the Conference on Limitation of Armaments and while the Four-Power Treaty was awaiting ratification by the Senate the Chamber's Committee on Foreign Affairs issued a report in which the committee urged ratification of the treaties prepared in the Conference as designed to accomplish those purposes which the Chamber had supported. This report was distributed to the Chamber's membership and laid before the members of the Senate.

The National Chamber has been conspicuously active in the development of the International Chamber of Commerce, which was organized as the result of an international trade conference held under the auspices of the National Chamber in Atlantic City in 1919. The offices of the American Section of the International Chamber of Commerce are located in the headquarters of the National Chamber, which also provides an administrative Commissioner for the United States at International Headquarters in Paris.

The Chamber has actively opposed measures designed to inject the Government into the fields of private business, such as bills in Congress which provide for Government operation of monopolistic workmen's compensation insurance in the District of Columbia and a bill to amend the Postal Savings Act which would place the Government in the savings business in competition with a large number of banks.

The tenth annual meeting of the Chamber was held in Washington 16-18 May 1922 and was devoted to discussion of the subjects "European Conditions and Their Effect on American Business" and "A Merchant Marine." From this meeting came declarations from the delegates in attendance favoring among other things official representation of the United States on the Reparations Commission, participation by our Government in the International Court of Justice, confidence in the principles of the Federal Reserve System and endorsement of the work of the Conference on Limitation of Armaments and Far Eastern questions.

Special problems of the great branches of American industry and commerce have received the attention of the Chamber's various departments, which include Fabricated Production, Civic Development, Domestic Distribution, Finance, Insurance, Transportation and Communication, Natural Resources Production and Foreign Commerce.

In addition several investigating committees of the Chamber have been at work including committees on ocean transportation, fire waste and insurance, free zones, par collection of checks, forestry policy, immigration, education, business ethics and refunding of the war debt.

A referendum was held which closed 14 October on a report of the committee on par collection of checks through which the Chamber became committed in favor of legislation which would make par remittance of checks universal throughout the United States.

The officers of the Chamber are: Julius H. Barnes, president; John Joy Edson, treasurer; A. C. Bedford, Thomas E. Wilson, Harry A. Black and Thomas B. Stearns, vice-presidents; Willis H. Booth, William Butterworth, A. B. Farquhar, L. S. Gillette, Charles Nagel, honorary vice-presidents; Elliott H. Goodwin, resident vice-president, and D. A. Skinner, secretary.

The membership of the Chamber on 1 Nov. 1922 was 1,293 organizations, with an underlying membership of 764,154; 6,448 associate members and 6,667 individual members.

D. A. SKINNER.

Secretary.

CHARLES I (IV in Hungary), former Emperor of Austria and King of Hungary: b. Persenbeug, 17 Aug. 1887; d. in exile at Funchal, Madeira, 1 April 1922. He was a son of Archduke Otto Franz Joseph and a grandson of the late Archduke Karl Ludwig and Princess Annunziata, daughter of the late King Ferdinando II of the Two Sicilies. He succeeded his great-uncle, Franz Joseph I, as ruler of the former dual monarchy of Austria-Hungary upon the death of the latter at Schoenbrunn Castle on 21 Nov. 1916. He and his consort, the Princess Zita, daughter of Duke Robert, of Bourbon-Parma, whom he married on 21 Oct. 1911, were crowned King and Queen of Hungary at Budapest on 30 Dec. 1916. His reign lasted until 11 Nov. 1918, when, by a manifesto issued upon that date, he was prohibited from exercising any prerogatives as Emperor of Austria. Two days later he "temporarily" relinquished the throne of Hungary. The following March, accompanied by his family and suite, he left Austria under British protection and took up his residence in Switzerland. In April 1919 the Austrian Parliament formally deposed him and deprived the House of Hapsburg of all sovereign rights and other prerogatives in Austria. Charles never attempted to regain his position in Austria, but endeavored twice to re-establish himself as King of Hungary, which, with a Soviet interlude, had elected to remain a kingdom wherein the Hapsburg party was strong. His first ineffectual effort to regain the throne of Hungary was made on 26 March 1921, when he suddenly appeared in a suburb of Budapest and attempted to rally around him the Royalists. Two members of the Little Entente—Jugoslavia and Czechoslovakia—at once mobilized for an invasion of Hungary. Austria remained cool. Admiral Horthy, the Regent of Hungary, warned by the Conference of Ambassadors which in February 1920 had resolved that Charles should never again be allowed to return to Hungary, advised him to return to Switzerland. He did so on 5 April after issuing

a proclamation in which he regretfully admitted that the time was not then ripe for his return to power. His second attempt to regain the Hungarian throne was made a few months later and was spectacular. Accompanied by his wife, he flew in an airplane from Hertensein Castle, Switzerland, on 22 Oct. 1921 and landed in Burgenland where, gathering together a sort of army, he marched on Budapest. In the meantime he issued at Raab a proclamation in which he invoked the loyalty of his "subjects" and ordered the convocation of the old Parliament, which had been dissolved since October 1918. The Hungarian government stood firm and its troops soon disposed of Charles' army. On 24 October the Council of Ambassadors issued an ultimatum to Admiral Horthy demanding the deposition of Charles and the surrender of him and his wife to the Entente within 48 hours. The Little Entente once more had mobilized. Horthy complied with the ultimatum, and, the decision having been reached that it was not safe to permit Charles and his consort to reside in Switzerland, they were placed on board the British cruiser *Cardiff* and taken to Funchal, Madeira, where they were landed 19 Nov. 1921, and where Charles spent the remainder of his days. His final illness was brief. He died of pneumonia contracted a little over a week before his death.

Charles was educated under tutors at Persenbeug and thereafter in the public schools of Vienna. At the time of his ascension to the throne of the dual monarchy the process of dissolution already had started. With youthful impetuosity Charles did bold things in an effort to save his country and his dynasty. He endeavored to break away from the German control that had fastened itself upon Austria-Hungary during the closing years of the rule of his great-uncle Franz Joseph I. The death of the latter on 21 Nov. 1916 was regarded by Emperor William II of Germany as a serious blow to the cause of the Central Empires. The German Kaiser did not trust Charles who had been brought up in the school of his uncle, Archduke Francis Ferdinand, the heir presumptive to the Austro-Hungarian throne, whose assassination at Sarajevo on 28 June 1914 was the spark that kindled the World War. Charles, like his uncle, is said to have hoped for a tri-une empire of German, Czech, and Slav nationals entirely free of Berlin patronage or direction. William II, on the other hand, desired to bring about a union of German-Austria and Germany upon the death of Franz Joseph, but when the old Emperor passed away the time for putting the scheme into effect was not regarded as propitious. There was another reason for the German Kaiser's distrust of Charles. The latter's wife was a descendant of the old Italian house of Bourbon-Parma and is said to have detested the Prussians. Within a month after Charles' succession to the throne, he endeavored to get into communication with his wife's two brothers—Prince Sixtus and Prince Xavier—both of whom were then serving in the Belgian army, the former in the ambulance corps and the latter as a captain of artillery. The Austro-Hungarian monarch's purpose was to bring about, if possible, a separate peace for his own country. Without the knowledge of the German Kaiser, Prince Sixtus

was invited to meet Charles and the Empress Zita at Laxenburg. Inasmuch as Zita, who penned the invitation, had intimated rather strongly what the nature and result of the meeting might be, Sixtus had no difficulty in securing a furlough from the Belgian army and a passport from the French government, granting him permission "to go to Switzerland." His passport bore the date 25 Jan. 1917. At Laxenburg Charles handed him a letter with the request that he show it to Raymond Poincare, then President of the French Republic. The letter was written on paper bearing the Hapsburg coat-of-arms and was signed "Charles." It was written in French entirely in Charles' own hand. Although not dated Sixtus afterward declared that his brother-in-law wrote it and handed it to him at Laxenburg on 24 March 1917. The letter described in general terms what the Austro-Hungarian Empire had suffered because of the war and asserted that neither the government nor the people could stand more. It praised the endurance of the French and stated that Charles wished President Poincare to know that he, Charles, would use his best offices to secure for France the return of Alsace-Lorraine. The letter further stated that Belgium also should be restored to her pre-war condition. The letter was taken to Paris by Prince Sixtus, shown to President Poincare, and its contents communicated to the British Prime Minister, Lloyd George. Charles' scheme for a separate peace is said to have been received with a certain amount of favor in both Paris and London. However, Charles had failed to make any promises with respect to "Italia Irredenta" or to provide for any compensation to Italy and because of this fact the Italian government, when taken into the secret, rejected the overtures. The matter was kept secret for about one year, but, in the attempt of the Publicists to show the German war plans back of the Reichstag's peace resolution of July 1917 and the Pope's Peace Note of 1 August following, something of the truth leaked out during certain unofficial negotiations France was conducting in Switzerland for the purpose, it has been alleged, of reviving of Charles' plan. When Emperor William II of Germany was informed of what had taken place, he sternly rebuked the Austro-Hungarian ruler and forced from Charles a denial of the whole matter. It has been asserted that the text of Charles' denial was brought from the German General Headquarters by an officer of the general staff and presented to Charles for his signature. As an answer to this denial, Georges Clemenceau, then Premier of France, published in facsimile on 12 April 1918 Charles' letter and all documents connected therewith. After the close of the war, Prince Sixtus published a book confirming the entire matter and giving the additional information, not known at the time Clemenceau published the facts regarding Charles' proposal, that the failure of the scheme was due solely to the fact that Italy was not mentioned in the plan.

Charles was a man of no more than average ability. His failure politically and militarily proves that he was no statesman. His last days were spent in comparative poverty. For a short while after their banishment to Madeira, he and

his wife lived at the Villa Victoria, an annex of Reid's Palace Hotel, at Funchal. They had but two servants and only the Count and Countess Hunyadi as courtiers. Later, being unable to realize anything on his Austrian and Hungarian properties and the funds which he took with him having become exhausted, he and the former Empress Zita moved into a bungalow which was loaned them by the Portuguese government and in which he died.

CHARLES A. COFFIN FOUNDATION.

During the latter part of 1922 the General Electric Company, by action of its directors, set aside a fund of \$400,000 to be known as the Charles A. Coffin Foundation, the income from which, estimated at approximately \$20,000 per year, is to be available, it was said, for encouraging and rewarding service in the electrical field by giving prizes to the company's employees and recognition to lighting, power and railway companies for improvement in service to the public, also fellowships to graduate students, and funds for research work at technical schools and colleges. The Foundation is to be controlled and administered by the Foundation Committee appointed by the General Electric Company Board. This committee, within the limits of the purpose for which the Foundation was created, has power to change the conditions applicable to the distribution of the fund and the amounts for each particular purpose.

CHARLESTON, College of, a non-sectarian co-educational institution founded in 1785 and located at Charleston, S. C. In 1922-23 it had a faculty of 12 members, 152 students, property valued at \$607,300, and an income of \$40,020.59. Harrison Randolph, LL.D., is president.

CHATTANOOGA, University of, a Methodist-Episcopal co-educational institution, founded in 1886 and located at Chattanooga and Athens, Tenn. In 1922-23 it had a faculty of 37 members, 625 students, property valued at \$726,298.32 and an income of \$107,000. Arlo Ayres Brown, D.D., is president.

CHAUTAUQUA INSTITUTION, the controlling organization of the popular educational centre at Chautauqua Lake, N. Y. This corporation is organized not for profit but is conducted for educational purposes by a board of trustees. Its property comprises about 200 acres on the terraces above Lake Chautauqua. Here are located large and commodious school buildings, an hotel and several cottages, a hall of philosophy and a large amphitheatre which seats about 6,000 persons. Founded in 1874 for Biblical and religious teaching, the institution has long since outgrown its sectarianism and at present it gives a popular series of lectures and addresses, concerts, dramas, etc. For a smaller number there are literary, scientific and philosophical lectures in progressive courses. Reading circles carry on the work throughout the year in neighborhoods and villages throughout the country. The total enrollment of Chautauqua readers is nearly 500,000 but many drop out before the completion of the four-year course. The number of those who have completed the full courses is about 65,000. The president of the institution in 1922 was A. E. Bester and the secretary, E. H. Smith.

CHEESE. See DAIRY PRODUCTS; also COLD STORAGE.

CHEMICAL MANUFACTURING. Very great advances have been made in many lines of chemical manufacturing during recent years. This has been, of course, a more or less continuous process, of which only a few of the more novel may be here described. Our theoretical knowledge is rapidly improving and is constantly applied to the manufacturing process, greatly to its advantage. In the hydrogenation of fats, for example, the chief line of advance open to improvement seems to lie in the cheapening of the hydrogen, and important developments have been reported by Georges Claude and others. Another development of the gas industry is the application of liquid oxygen to blasting. This idea while not novel has been perfected and put into commercial use by the Real del Monte y Pachuca Company at Pachuca, Mexico. This is a subsidiary of the United States Smelting, Refining and Mining Company. The cartridges are composed of lampblack made by burning the residual gum from the refining of Mexican petroleum. They are prepared for use by soaking in liquid oxygen prepared at the plant, inserting rapidly into the drill holes and exploding. Their use shows economies which can probably be increased as the process is better handled. Progress has also been made in the manufacture of carbon dioxide for use in soda fountains. This is now made from the waste gases of the boiler plant used for generating steam for the pumps necessary to liquefy the gas. This waste gas is first cooled by using it to boil sodium bicarbonate solution. The cooled gas is then freed from soot and sulphur dioxide by passing it up through towers filled with limestone down which water is trickling. The gas is then passed through two towers filled with coke over which a solution of sodium carbonate is passing. Part of the carbon dioxide dissolves (about 8 out of 18 per cent) and the rest is run to waste. The sodium bicarbonate solution so obtained is now pumped into boilers through the tubes of which the waste gases of the steam boilers are first passed; this liberates carbon dioxide which is cooled, compressed, liquefied and charged into steel tubes to be sent to the soda fountain. The soda solution is used over again. Nearly 60,000,000 pounds of carbon dioxide were produced in 1919, valued at over \$6,500,000.

In the early days of sulphuric acid manufacture, the acid was made altogether by burning sulphur, the most of it coming from Sicily. The government then granted a monopoly to a French syndicate which raised the price to \$70 per ton. This led to the substitution of pyrites as the source of sulphur, and the use of pyrites continued until the great war when difficulties in transportation from Portugal led to the almost entire substitution of sulphur from the Louisiana and Texas districts. In 1892 the American production was 2,300 tons. In 1921 this had touched the peak at 1,879,150 tons, with imports of only 50 tons. In this same year exports from the United States were 285,762 tons, showing the important place we now occupy in the production and use of sulphur. While the American production has been increasing the Sicilian production has steadily decreased and

sales are now limited to nearby consumers. The three producers in this country—the Texas Gulf Sulphur Company, Union Sulphur Company, and the Freeport Sulphur Company, have now formed an export association to promote the use of sulphur abroad in the place of pyrites in the manufacture of sulphuric acid. Sulphur dioxide is a waste product in many remote places where it is formed in immense quantities in roasting sulphide ores. A beginning has been made in utilizing this material by separating it from the waste gases, pumping it into cylinders like those used for carbon dioxide and transporting it to market. Of course, success in this operation will depend very largely upon transportation costs. The product is especially fitted for use in the disintegration of spruce for the manufacture of sulphite paper stock.

Selenium and tellurium are obtained from the slimes of copper refineries and the amount that can be produced from this source greatly exceeds the consumption. Efforts are now being made to find new outlets for these substances. Successful attempts have been made to prepare phosphoric acid from inferior bone phosphate by heating it with coke and sand in the electric furnace. The product is separated in a Cottrell separator in the form of a light powder which attracts moisture rapidly from the air and is converted into a syrupy solution. The product is available for the manufacture of any phosphate as well as for the preparation of concentrated superphosphate of lime for use as fertilizer. The tendency in the fertilizer trade is now toward the production of higher grade products, thus cheapening the cost of carriage. Synthetic fertilizers such as ammonium nitrate and ammonium and potassium phosphate have much to commend them as fertilizing material and their use is on the increase. Urea is now prepared in quantity from calcium cyanamide and seems likely to be of use as a fertilizer. In ceramics and in refractories and glass very rapid progress is being made. The American Ceramic Society is now well organized and is a powerful instrument in promoting progress in these lines. The tunnel kiln has been widely adopted for quantity production with great saving of fuel and better uniformity of product.

The Fansteel Products Company has placed on the market a new commercial metal, tantalum, which has very interesting properties. It is described as having a specific gravity of 16.6 with a melting point of 2,850° C. and the wire drawn from it has a tensile strength of 130,000 pounds. It is malleable and may be worked at ordinary temperatures to a remarkable extent without annealing. The electrical resistance is eight times that of copper. It acts as an electrolytic valve and may be used in rectifying alternating current. The most unusual property of this metal is its resistance to corrosion. It is not attacked by hydrochloric or nitric acid nor by aqua regia, hot or cold. This metal absorbs gases readily and would appear to be worth testing in radio apparatus. The new metal is prepared from tantalite by fusion with caustic potash adding hydrofluoric acid and crystallizing out the double fluorid. This is mixed with sodium and heated in a

vacuum. The powder so produced is compressed and melted in a vacuum furnace. This description shows at once that unless a cheap source of supply can be found and a much simpler process of reduction the metal is bound to be so high in price as to be more of a curiosity than a commercial product. No doubt these will in time be found and the metal is certain, if its properties have been correctly described, to be of greater value than platinum. Tank cars for conveying hydrochloric acid now have pure rubber linings which acts as a complete protection to the steel shell. Pumps of hard rubber and pumps made of metal with hard rubber linings as well as hard rubber pipes are now on the market. All these as well as improvements in the manufacture of chemical stoneware and the size of stoneware vessels obtainable mark the increase in man's command over the forces of nature. In this connection the manufacture of large containers of pure nickel and aluminum is noteworthy as well as the improvement in enameled vessels.

The Du Pont chemists have discovered that the addition of small amounts of a metallic salt to an acetone solution of nitro-cotton greatly decreases its viscosity so that it may be sprayed. The cleaned articles such as automobile bodies are sprayed with the solution and the solvent allowed to evaporate. This produces a thin varnish which is tough, flexible, elastic and impervious to water or even to dilute acids, and protects corrodible metals and wood perfectly. This varnish may have any desired color by the addition of dyes or pigments which gives a wide field of application. It has been suggested that this may prove to be an admirable anti-fouling coating for sea-going vessels. Filtration processes have recently been greatly improved. It has been shown, for example, that by the introduction of paper pulp made of old newspapers into a liquid the rapidity of filtration, as well as the clarity of the filtered liquid is greatly improved. In this way water containing a very large bacterial count may have this reduced to, say, 100 per cubic centimeter. In addition the mechanical construction of the filter press has been improved, allowing it to do more and better work.

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EDWARD HART,

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CHEMICALS. This industry in the United States includes a great variety of concerns that make widely different chemicals, and many that produce one or more chemicals as a by-product. The census has grouped them under one head for convenience, and reports every five years on nearly the same concerns. There were 395 of them in 1914, and 598 in 1919, and there is no evidence of a larger total in 1923. Change in values has been so great that the growth in business is best measured by the number of employees—32,311 in 1914, 55,586 in 1919, and 57,000 (est.) in 1923. Measured in dollars, the

expansion was much greater, from \$158,000,000 production in 1914 to \$438,659,000 in 1919, and \$450,000,000 (est.) in 1922. During the latter year the larger concerns were reported as working 80 per cent of their normal capacity. The analysis of conditions does not reveal as much general prosperity as at first suggested by these figures. Twenty-five leading industrial chemicals which are systematically averaged to secure an index to rising and falling prices, showed 440.3 index number in 1922, as against what is called the normal index of August, 1914—326.6. But the December index was only 430.7, the first week in January 429.5, and second week in February 434.7; indicating a rather weak market. Twelve representative acids made a better price showing. Their index number was 14.3 in 1922, and the normal of 1914 was 12.6. In December, 1922, they stiffened to 16.2, but fell off very slightly in January and February, 1923.

Coal tar products became very stiff in price, due to the situation in the Ruhr coal fields, where this industry reached such high development. For 20 leading coal tar products the index number for 1914 is 12. In 1922 the index averaged 28.9, and was above 30 through December and January, and 31.6 15 Feb. 1923. The United States production of benzol and crude derivatives in 1923 was much reduced by the coal strike conditions.

The chemical sensation of the year 1922 was in industrial arsenic. It became so scarce that a government investigation was instituted. The shortage of white arsenic was estimated 18 Jan. 1922, as 5,000 tons, with the situation growing worse, as arsenic is relied upon to fight the boll weevil in cotton growing. Then came a report from an expert of the Cotton Growers Association, that very large deposits of iron arsenate existed in Utah, and were being opened up, and that there would be an abundance by July 1923, with indefinitely large reserves for the future. Naturally the price of arsenic has been very high and unstable.

Early in 1923 the industrial chemicals which commanded a rising price were arsenic, blue vitriol, soda ash, caustic soda and nitrite soda.

Chemicals, Exports of. During the fiscal year 1922 chemicals and allied products valued at \$100,518,943 were exported from the United States. Exports during the preceding year amounted to a total of approximately \$220,000,000. But, asserts the United States Department of Commerce, the authority for the values quoted, "from these figures it cannot be assumed that there was a 50 per cent decrease in exports, as there was a marked decline in the value of the products exported during that period. In the more important chemicals there were both marked decreases and important increases in the quantity shipped from the United States." Among the so-called heavy chemicals, says the Department of Commerce, exports of acetate of lime and glycerine more than doubled in quantity to 27,606,499 pounds (value of \$587,174) and 3,625,999 pounds (value \$508,807), respectively; caustic soda rose by 20,000,000 pounds to more than 123,000,000 pounds, valued at \$4,660,815; borax advanced by 150 per cent to 10,094,724 pounds, valued at \$545,601; and silicate of soda and copper sulphate increased slightly to 26-

024,366 pounds (value \$279,041) and 4,809,948 pounds (value \$227,019), respectively. On the other hand the exportation of bleaching powder decreased by 11,000,000 pounds to 26,439,251 pounds, valued at \$502,870; and soda ash showed a marked decline—from 113,000,000 pounds in 1921 to about 33,000,000 pounds (value \$757,648) in 1922. The export classification for chemical products was expanded considerably beginning with January 1922. Several articles for which export statistics are first shown for the six-month period ending 30 June 1922 indicate an important trade in these items. For example, dextrine was exported to the extent of 7,723,920 pounds, bichromate of potash 3,716,760 pounds, aluminum sulphate 11,986,218 pounds, ammonia and ammonium compounds (ammonium sulphate excepted) 2,573,598 pounds, and boric acid 834,598 pounds.

The foreign trade in coal-tar dyes, colors, and stains, except color lakes, showed a marked decrease—from \$13,577,788 for the fiscal year 1921 to only \$3,805,917 in 1922. The exports of pigments, paints, and varnishes amounted to \$10,069,211, or about 50 per cent in value of foreign shipments for 1921. This decrease was largely accounted for by a decline in the trade in white lead from 17,400,000 pounds in 1921 to about 9,000,000 pounds in 1922. The export classification for these products has also been materially expanded. The exports during the six months ending 30 June 1922 of the more important pigments for which figures are shown for the first time are lithopone 1,909,041 pounds, bone black 1,014,390 pounds, and carbon and lampblack 10,187,055 pounds. Medicinal and pharmaceutical preparations decreased to \$5,383,399, or only one-third of the value of the exports for the fiscal year 1921. Among fertilizer materials, exports of ammonium sulphate more than doubled in quantity to 168,077 long tons, valued at \$8,720,775, while there was a slight decrease in shipments of phosphate rock. In contrast were the exports of prepared fertilizers for the first six months of 1922 which amounted to only 9,204 tons, valued at \$469,366.

Exports of naval stores indicated an improvement in this trade during the 1922 fiscal year, particularly with respect to rosin. Shipments of this product increased in quantity from 877,109 barrels in 1921 to 1,403,921 barrels in 1922, but declined in value from more than \$10,000,000 to \$6,623,499. Exports went chiefly to the United Kingdom, Germany, Argentina, and Brazil. Foreign shipments of turpentine increased slightly—to 10,786,280 gallons, valued at \$8,071,839. This was a decrease, however, of \$3,000,000 in value.

During the last six months of the calendar year 1922, the chemical export business improved to such an extent that the total shipments for the year slightly exceeded those for the calendar year 1921, the aggregate values being \$106,101,562 for 1922 compared with \$104,639,941 for 1921.

CHEMISTRY, General, Physical and Inorganic. During the World War the chemical industry underwent an immense expansion and the production reached a point far in excess of peace demands. On the conclusion of the armistice much of this production was arrested, but

the crash in the chemical trade was not reached until early in 1921. Most of the great corporations which had organized a tremendous staff during the war then began to discharge their personnel, cutting the force to the barest skeleton of what it had been. This resulted in many cases of severe hardship. The process of getting back to a peaceful base of operations seems at this writing to have been accomplished. Prices have fallen, but not so greatly as might have been expected. This is due largely to the fact that by operation of the emigration law and the strong position of the labor unions wages have fallen very little. The research carried on during the war was largely on technical lines; most of the results were not revealed but are now coming to light. Since the war numerous fellowships have been established for fostering research and during the year 1922 great advances in our knowledge were made. It will be impossible in the available space to give a full account of these. The American Chemical Society is now the greatest chemical society in the world, both in numbers and in the quality and quantity of the material published. The membership is now about 15,000 and three journals are published: *The Journal of the American Chemical Society*, *The Journal of Industrial and Engineering Chemistry* and *Chemical Abstracts*. The first prints 2,800, the second 1,200 and the third 5,000 pages annually at a cost of \$15 to each member. In addition we have *Metallurgical and Chemical Engineering* and *The Chemical Age*.

In the *Journal of the Franklin Institute* William D. Harkins has published a series of articles on Atom Nuclei, the Separation of Isotopes and the Whole Number Rule. It is assumed that the simplest atom is that of hydrogen. This has a mass = 1.0078. It consists of a positive ion of mass nearly equal to that of the atom, or 1.0023, positively charged, called proton, p , and an electron, e , with a mass of 0.0055, and a negative charge = 4.77×10^{-10} electrostatic units. The atom of hydrogen is p, e and it is believed that all other atoms are intra atomic compounds of hydrogen. It is believed that in oxygen there are 16 electron pairs united more closely than in the hydrogen atom. This closer union is designated by pe , and oxygen is therefore $p_{16}e_{16}$ and calcium is $p_{40}e_{40}$. This closer union is accompanied by a loss of potential energy = 0.0078, which Harkins calls the packing effect. It is evident that if this be true the mean atomic weights will be close to whole numbers. It is believed that the alpha particle and the helium nucleus are identical and that the helium atom is represented by $(p_{4}e_{2})_{4}$, in which half the negative electrons are contained in the nucleus, and that lithium is = $He + H$, beryllium $2He + H$, boron $2He + H$, carbon $3He$, etc. It is shown that if this theory be true the heat evolved by transformation of one pound of hydrogen into helium would equal that of 10,000 tons of coal. It is possible that this reaction occurs at high temperatures and pressures in the stars which would be a possible source of heat and light in these bodies.

By dissolving beryllium carbonate in glacial acetic acid, recrystallizing the basic acetate and subliming it Homigschmid and Birkenbach have

obtained a very pure acetate. This was converted into nitrate by heating with nitric acid and the nitrate treated with pure ammonium carbonate until the precipitate redissolved. The solution was then filtered, the filtrate boiled in platinum and the precipitate collected, washed and ignited. The oxid produced they think was exceptionally pure. This was then mixed with sugar charcoal and ignited in a stream of chlorine. The chlorid was resublimed and portions weighed out and precipitated as silver chlorid. As the mean of two series of determinations, the first of 13 and the second of five, varying between 9.015 and 9.022 the mean 9.018 was obtained as the true atomic weight. The authors point out that if the hypothesis that beryllium is composed of He_2 is accepted the atomic weight must be eight. If it be $\text{He}_2 + \text{H}$ the figure found by them is nearer the whole number required than those of other recent determinations. In further confirmation of the theory of whole numbers, Fogg and James have determined the atomic weight of Yttrium as 89.03. But Hopkins and Driggs find the atomic weight of Lanthanum to be 138.89 which is in close agreement with the value found by Baxter, Tani and Chapin of 138.91. Mullikin and Harkins have separated the isotopes of mercury by evaporation in a vacuum, and Mullikin has asserted that isotopes should be separable by diffusives and by centrifuging a liquid. Crocker has applied the Lewis-Langmuir octet theory of atomic structure to benzene. Huggins has also developed his ideas of the structure of benzene and Eastman has speculated on the electron structure in unsaturated molecules. Laue, of Zurich, has previously shown that if a pencil of X-rays is allowed to pass through a crystal the diffracted rays show arrangements about a primary beam which differ with the different crystals employed. Work which has since been done with the X-ray spectrometer has shown that conclusions may be drawn concerning the atomic structure of crystals.

At the meeting of the British Association for the Advancement of Science at Hull, Sir William Bragg reported upon the work which, assisted by his son, he had recently performed. It will perhaps be best to quote his words, "Every crystal," he says, "is built up of units, and every unit is the counterpart of the crystal. The crystal unit contains every kind of atom or bond; every feature and every property that the crystal possesses as a whole." "X-ray analysis tells us the number of atoms in the unit, and is throwing more and more light on their arrangement. The limitation to our knowledge of the properties of gases and liquids is severe. We remove it when by aid of X-ray analysis we examine the nature of crystal units, because the unit displays all the properties of the solid. A crystal has elasticities, thermal expansions, thermal and electrical conductivities, dielectric capacities, optical activities, and these not only as scalars but as vectors."

"The many properties, for example, of quartz as a crystal, are all displayed by its crystal units—i. e., by three molecules of SiO_2 arranged in a particular way. They are not characteristic of the separate molecules of SiO_2 , still less of the separate atoms of Si and O.

When we know the exact arrangement of the nine atoms of this unit we can apply all that we know about quartz to that small group. In this way a wide field of research opens out in which the crystal unit plays a part like that of the molecule in other fields. And the magnitude of the results may be as great."

Pease has shown that it is possible to calculate the interatomic distances in Angstrom units ($\text{\AA} = \text{U} = 10^{-8} \text{cm}$). The calculated distances are in close agreement with those observed.

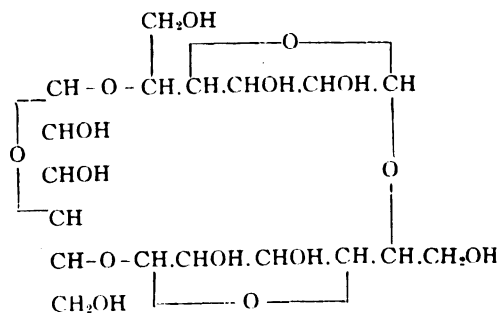
Numerous studies of crystal structure have been made by Dickinson, Bozorth, Wyckoff and Huggins. Equilibria in various systems has been examined by Loomis, Walton and Wise, Bichowski and others and the absorption of silica gel has been studied by Davidheiser and Patrick.

A considerable number of catalytic phenomena have been studied. C. L. Burdick has discovered that activated carbon greatly increases the speed of the reaction: $2\text{NO} + \text{O}_2 = 2\text{NO}_2$. This is likely to be of use in the distillation of nitric acid and in many oxidations. Lamb and others have found that small amounts of carbon monoxid may be removed from water gas by selective oxidation without affecting the hydrogen thereby enabling the hydrogenation of fats, etc., to be carried on more cheaply.

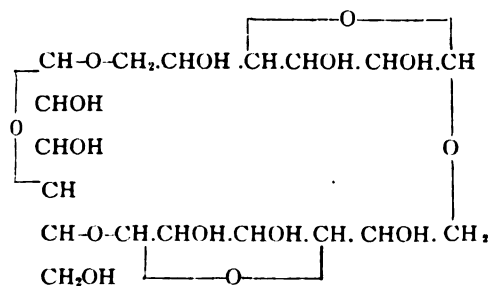
Intensive work has been going on recently in an effort to determine the real nature of the action of light on the silver halides and the physical and chemical condition of the latter as they exist in photographic emulsions. Among those especially active in this field are Renwick, Sheppard, Mees.

Glund reports that when copper is precipitated from an ammoniacal solution with hydrogen sulfid, the properties of the precipitate change entirely in the course of four or five hours. The sulfid first formed oxidizes readily in air with separation of sulfur; after the lapse of five hours, the sulfur oxidizes to SO_2 or SO_3 . He believes that the first sulfid is Cu_2S while the second form is $(\text{Cu})_2\text{S}_2$.

Organic and Biological.—Denham and Hurst have shown that cellulose ($\text{C}_6\text{H}_{10}\text{O}_5$) is composed wholly of glucose units. They prefer the following formula:



Macdonald is of opinion that starch is a polysaccharide derived from a comparatively simple anhydro-sugar by profound polymerization. The formula proposed is:



Both the symbol for cellulose and that for starch are the result of studies on the methylation of these substances carried out at the University of Saint Andrews under the direction of the principal, Prof. J. C. Irvine.

Wise and Russell are of opinion that the cellulose from spruce wood is practically identical with cotton cellulose if properly purified. Mahood and Cable find that by recocking easy bleaching sulfite pulp with soda and bleaching with 2 per cent bleach a material nearly corresponding to purified linters is obtained. Ritter and Fleck have made proximate analyses of a number of American woods.

In a recently published book on colloidal behavior, Dr. Jacques Loeb states that colloids are amphoteric electrolytes and they are found to combine with acids and alkalis in stoichiometrical proportion if their hydrogen ion concentration is taken into consideration. It is also shown that experimental evidence accords with Donnan's theory of membrane equilibria, so that colloids do not form exceptions to general chemical law.

Bogue has reported on the progress of work made in the knowledge of gelatin, as follows: "Gelatin is found to exist in three states: as non-ionogenic or isoelectric gelatin; as a metal gelatinate; and as a gelatin salt." Bogue has collected the known data on this subject into a book.

The world's supply of petroleum has been discussed by David White. The total available amount is put at 70 billion barrels. We have already taken out five and a half billion barrels in the United States and only 11 billion remain. The world's output has been eight and a half billion. We are using 525 million and producing 490 million. Our shale deposits are capable of supplying 80 billion barrels, and much more may be obtained by the low temperature distillation of inferior bituminous coal.

Penta phenyl ethyl has been prepared by Schlink and Mark who draw interesting conclusions regarding valency from its behavior. Cake finds that some sugars may be reduced to the corresponding alcohols by hydrogen and platinum black. Stieglitz has studied the electron theory of valence as applied to organic compounds.

Krase and Gaddy have investigated the formation of urea from ammonia and carbon dioxide. The chemical characteristics of urea adapt it to many uses in the arts, in varnishes, as a stabilizer in explosives, in transparent photographic films. If it were possible to produce it cheaply enough it would make an excellent fertilizer. Ammonia and carbon dioxide were

passed into absolute alcohol according to Mente. The ammonium carbonate produced was sealed in hard glass tubes and heated to the proper temperature. A small scale apparatus for manufacturing urea was then constructed and the preparation of carbamate on a larger scale studied. It is evident that absolute alcohol cannot be used in large operations. It was found that by mixing the gases in proper proportions and passing into a cooled receiver with scraper the carbamate could be prepared in quantity. This was then heated in an autoclave and the melt distilled in a stream of carbon dioxide to carry off the unaltered ammonium carbonate which was used over in another operation. The yield was 40 per cent urea and the results obtained justify further investigation of the process for technical operation.

Drying oils from petroleum for use in place of linseed oil in the manufacture of paints have been the subject of investigation by Gardner and Bielouss. They used for their purpose a fraction known as nonviscous neutral oil. This contains hydrocarbons from $C_{17}H_{34}$ to $C_{24}H_{50}$. This material is chlorinated until it has increased in weight about 15 per cent. It is then dechlorinated by simply heating to 250 degrees. The chlorine is eliminated as hydrochloric acid and the remaining oil it is believed will ultimately find wide commercial application.

William H. Scheel finds that the addition of about 1 per cent of lime made from coral to rosin gives a clear transparent varnish which cannot be obtained from either oyster shell lime or that made from limestone. The product so obtained is used in the manufacture of cheap varnish.

S. Kaye finds that the addition to paper stock during the beating of a small proportion of rubber latex reduces the power required and also the time needed. It appears also to improve the strength and quality of the paper.

Synthetic tannins or "syntans" are condensation products of formaldehyde with sulfonated cresols and other aromatic substances. They are finding increased use in the tanning industry. The synthetic tannins are described in a new book by Georg Grasser. This book is however a translation of a not very recent German text and is devoted almost entirely to the products of the Badische Anilin und Soda Fabrik.

Thomas has described the vegetable tannins, their sources, preparation and uses in a valuable summary which contains also a set of useful references to original sources of information.

Careful studies of the phenomena of explosion as applied to the automobile are under way. Midgley and Boyd find that the addition of very small quantities of the ethyl derivatives of tin, selenium, tellurium and lead to the gasoline prevent "knocking." The amount needed is least with lead tetraethyl which is 70,000 times as effective as benzene. Tellurium ethyl comes next being 3,000 times as effective as benzene.

In another paper entitled "Can we Afford the Ford?" G. G. Brown asserts that the Ford car averages 17.5 miles per gallon of gasoline used. Compared with other cars it should give 24 miles. One cause of this inefficiency is the present carbureting system, which can be so

improved that the average Ford driven under average conditions, will give 25 miles per gallon and operate as economically as more expensive cars. If this one improvement were applied to all Ford cars in this country, 400,000,000 gallons of gasoline would be saved annually.

Jameson, Drummond and Coward have shown that the diatom *Netschia closterium* is able to synthesize vitamin. A. Coward finds that this vitamin contained in fish oil is derived from unicellular marine plants. Drummond and Zilva have spent several weeks in Norway studying the cause of the variations in quality of cod liver oil. They describe the methods of catching the cod, the methods of preparing the oil and its various grades.

In the old method the livers were thrown into a barrel and allowed to decay, the oil rising to the surface. This was skimmed off and had an objectionable odor and taste due to the presence of products of putrefaction. In 1853 Möller introduced the steaming process which gives a much less objectionable product. This and the steam jacketed pan process are now in almost universal use except where the catch is too small to admit of its use, and here the old rotting process is still used, producing an inferior oil not used in medicine. The content of vitamin seems to be very nearly independent of the method of preparation but depends more upon the food of the fish which varies somewhat in different places and seasons. The oil is refined by chilling and pressing to separate stearine. It is suspected that its valuable medicinal properties may be due quite as much to the presence of large amounts of highly unsaturated fatty acids as to its vitamin content. These oxidize readily in air, and in some cases highly elaborate methods are used in preparation to avoid this oxidation which gives an unpleasant taste to the oil.

McLeod and Gordon have found that *Pneumococcus* is able to form hydrogen peroxid which inhibits its growth; this is true also of many streptococci.

Gardner, King and Powers find that at 16 degrees C., eight-inch trout consume about one-sixth of their weight of oxygen per hour, while goldfish use only one-twentieth.

H. B. Harvey has grown wheat, oats, barley, rye, potatoes, buckwheat, lettuce, beans, peas, clovers, radishes, flax and a number of common weeds from seed to seed entirely in artificial light using a tungsten filament, nitrogen filled lamp.

Until recently it was supposed that only chlorophyll in presence of sunlight could decompose carbon dioxide and liberate the oxygen. It is now known that with light of 200mμ wave length it may be decomposed, the energy absorption of one molecule of CO₂ being 150,000 calories. The products are oxygen and formaldehyde, the latter polymerizing. In the plant it is believed by E. C. C. Baly, that: (i) Chlorophyll A + H₂CO₃ + light → Chlorophyll B + CH₂O. (ii) Chlorophyll B + Carotin → Chlorophyll A + Xanthophyll. (iii) Xanthophyll + light → Carotin + Oxygen.

The formaldehyde so formed was very reactive and was probably CHOH. It polymerized rapidly to a mixture of carbohydrates, in which hexoses are found and evidence of the

formation of more complex substances is not wanting. In the presence of a nitrite it is converted into formhydroxamic acid, and hence into amino acids and a mixture of cyclic bases in which pyridine, coniine and glyoxaline have been detected. The active (energised) forms of the amino acids condensed with the cyclic bases to give substituted amino acids, and these were the immediate sources of the proteins.

In opening the discussion on photosynthesis at the Hull meeting of the British Association for the Advancement of Science, of which the above forms a part, Dr. F. F. Blackman said that there were numerous lower plants which obtained all their carbon by the reduction of carbon dioxide in the dark without the intervention of radiation, and synthesized all their organic compounds from that source.

In the second place, the seedlings of many plants at a stage when they have developed chlorophyll to a full green color might be quite incapable of reducing carbon dioxide in light, and gave out as much of that gas from respiration in light as in dark. Some other component or property lagged behind the chlorophyll in its development and the slow, steady rate of its development was the same in darkness or light.

A third point of interest was the efficiency in golden leaved varieties. The amount of chlorophyll might be as low as 4 per cent of the normal green form, and yet the reduction be as great as in green leaves. The golden leaf needs more light, however, than the green leaf to carry out the same rate of reduction.

A fourth point was the necessity of a high temperature.

Fifth, it had been found that phenylurethane depressed the rate of photosynthesis, with complete recovery on its removal. He was therefore of opinion that the chloroplast contained an active system of several components related together by a complex organization.

It is evident from the above that considerable diversity of opinion exists as to the mechanism of photosynthesis in plants, and that much further experimentation is needed before they can be reconciled, but the progress recently made indicates that this baffling problem will probably be solved in the near future.

Furfural or furfuraldehyde is now a commercial product, being made on a large scale with the production steadily increasing. The history, methods of production and uses of this substance are described by Miner, Trickey and Brownlee. They suggest the preparation by boiling oat hulls with steam and acids in large rotary digesters. Oat hulls are produced in a single plant to the extent of 200 tons in a single day and theoretically should give 20 per cent furfural. It may also be produced in quantity from corncohs. Considerable quantities of furfural are used in the manufacture of artificial resins by condensation of furfural with phenol and other aromatics. Varnish resins have been prepared, and furfuramide is believed to have accelerating properties in rubber vulcanization. Dyes and anaesthetics, antiseptics and germicides have been prepared and it has been found to be an excellent solvent for nitrocellulose and the cellulose acetates. It is miscible in all proportions with China wood oil.

Stearic acid is slightly soluble in cold furfural and easily in hot, and oleic acid is readily soluble at 25 degrees C. This paper concludes with a bibliography of the subject.

Analytical.—The membrane filter of Zsigmondy and Bachman has been applied to new determinations by Gerhart Jander. The method of electric conductivity has had further extension at the hands of J. M. Kolthoff and others, and Erich Muller has written a book about it. It has been shown that copper mattes from the same mine may be compared by determining their specific gravity which gives a rapid method of determining their value.

The sampling of copper ores has been carefully studied by Demond and Halferdahl. S. Arrhenius describes a method of using the centrifuge in analysis. Taylor and Taylor have described an apparatus by which the amount of carbon monoxid in a gas may be automatically and continuously determined and recorded. This apparatus may also be used in any case where two or more fluids may be mixed in regulated volume. The determination is based upon electrolytic conductivity, temperature rise, etc. Gutbier, Huber and Schieber have described a rapid dialyser consisting of a barrel shaped frame made of glass rods or other suitable material. Over this a membrane is drawn and the sack thus formed is suspended in a container having a tubulure at the bottom by means of which water is passed in. This water may be withdrawn by a siphon. In order to hasten the dialysis the membrane sack has a stirrer suspended in it.

It has been found that alumina is an excellent absorbent for water vapor, and it is proposed to use it in drying tubes in place of calcium chlorid, which it exceeds in attraction for water vapor.

Selvig and Ratliff have studied mine water and methods for determining its constituents accurately; and Parr has described in the *Journal of Industrial and Engineering Chemistry* for August, p. 681, a short method with apparatus for the ultimate analysis of coal suitable for the use of engineers in boiler testing.

Scales and Marsh have applied the beam of light from the electric arc, first used by Tyndall, to the investigation of soil suspensions.

Parsons and Wilson propose a new method for the determination of color in petroleum distillates, in which the depth of standard color solution necessary to match the sample in the Duboscq colorimeter is determined.

Burdick describes a simple method of determining the oxids of nitrogen in gaseous mixtures by washing with alkali: the oxids are then determined by titration with potassium permanganate.

Nelson and Senseman have found an accurate method for the determination of the amount of anthraquinone in mixtures containing phenanthraquinone, anthracene, phenanthrene, phthalic anhydride and phthalic acid. The anthraquinone is first reduced to red oxvanthranol by means of zinc powder in 5 per cent sodium hydroxid. The solution is filtered in vacuum and titrated with standard potassium permanganate.

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EDWARD HART,
Professor of Chemical Engineering, Lafayette College.

CHEMISTRY, Federal Bureau of. The activities of the Bureau of Chemistry for 1922 fall into three groups which may be designated as (1) the application of chemistry to the production and utilization of agricultural products, (2) research in agricultural chemistry, and (3) the enforcement of regulatory statutes.

Agricultural Chemical Technology.—One of the results of work in the first group was a method to produce furfural commercially from corn cobs at a cost that makes it practical to use it as a low-priced substitute for formaldehyde in the manufacture of synthetic resins and as an intermediate in the dyestuffs industry. There have also been obtained from corn cobs acetic acid and an adhesive that can be used in the manufacture of pasteboard boxes and may prove useful in the manufacture of coal briquettes.

The invertase method of making cane sirup developed by the bureau was used commercially during the sirup season of 1921-22 with excellent results and for the first time Southern producers were able to put on the market a sirup that will not crystallize or readily ferment. In order to insure a product of uniform quality and to extend the market, a central blending plant is being erected by Texas sirup producers at Lufkin, Texas, and the bureau has been asked to aid in the solution of the technical and chemical problems involved in standardizing the sirup sent in by the different producers.

The invertase method has also been applied in the manufacture of a high density maple sirup and cane sugar sirup mixtures and patents for the processes have been applied for. A process has also been worked out for making a soft cream center for chocolate creams, a method for which has long been desired by the confectionery trade.

During the year a beverage having the stimulating quality of tea and coffee has been prepared from the cured leaves of the cassina plant which grows in great abundance along the south Atlantic and Gulf coasts. An experimental plant has been in operation during the past summer to demonstrate the possibilities of curing cassina leaves on a large scale and the results achieved indicate the feasibility of the project. Palatable carbonated beverages of three types have also been prepared with cassina extract as the base.

A number of tests on the wearing qualities of leather have demonstrated the greater serviceability of certain types. Detailed instructions for making chrome tanned leather on a small scale were prepared for which there was a great demand, resulting in the issuance of a department circular on the subject.

In collaboration with manufacturers, mixed fertilizers have been prepared on an experimental commercial scale from concentrated wool

wash water and the fertilizers have proved satisfactory for promoting the growth of wheat. A good grade of anhydrous lanolin has been obtained from solvents used in extracting certain grades of wool.

A process for which a public service patent has been issued outlines a method to produce rosin esters for varnish manufacturers. A method for detecting and estimating the quantity of coal-tar adulterant in turpentine has been devised. The work on the waterproofing of fabrics has demonstrated that the addition of pigments to waterproofing materials is beneficial since they reduce the injurious effects of solar light without reducing water resistance.

Control methods to minimize the danger of explosions in grain elevators and industrial plants have been developed and their efficiency demonstrated. Fans designed for explosion control in threshers have also been of value in cleaning grain and preventing wind dissemination of smut spores.

Reports on the utilization of cull and surplus citrus fruits in California show that several companies are manufacturing various commodities by methods devised by the Bureau. The price of culls has greatly increased by reason of the increased demand for them.

Aid in the development of a dye industry in the United States was an important project. A new process for the manufacture of indigo has been so perfected that a good quality can now be obtained at a lower price. Improvements have been made in the preparation of photosensitizing dyes which are used in aerial and astronomical photography.

Synthetic thymol has been made from cymene, a waste product in the paper industry, and patent for the process has been applied for. This drug is used as an antiseptic but more widely as a specific in the hookworm disease. The imported product comes from India and is sold for \$4.50 a pound but the synthetic product can be made to sell for considerably less.

Research in Agricultural Chemistry.—A synthetic apple oil with the aroma of ripe apples is another achievement attained by research chemists. This preparation has in it no substance that does not naturally occur in the apple and is especially suitable for flavoring cold drinks and ice cream.

In its research work on the nutritive value of feeds the Bureau of Chemistry learned that some feeds do not contain the amino acids that are absolutely essential for normal growth and that this deficiency can be supplied by other proteins. For instance, the protein of corn is deficient in lysine and tryptophane but by adding to corn the correct proportion of certain other proteins, the mixture will be found adequate for growth, and the feeding value and use of corn increased.

Research work on apple pomace and apple pectin pulp shows them to be of value as cattle feed and it has also been found that the 2,000 tons of tomato seed annually discarded in the tomato pulping industry may be utilized as cattle feed.

Progress has been made in developing insecticides to exterminate the pests most destructive

to farm crops and also to control insects infesting grains in storage and in transit.

Enforcing Pure Food Laws.—In enforcing the Food and Drugs Act the Bureau has checked the practice of selling vinegar made from dried apples as cider vinegar. A number of seizures of flour containing excessive moisture have been made. The shipment to Eastern markets of frozen oranges from California was prevented, the extensive misbranding of feeds as to percentages of protein, fat, crude fiber, etc., has been checked. Chloroform unfit for anesthesia purposes has been removed from the market; a larger number of eggs are being candled before shipment; commerce in oysters from polluted beds has been checked and sanitary conditions improved. The adulteration of scallops by water has been practically discontinued and a marked improvement has taken place in the crabmeat industry, the product formerly being misgraded and packed short weight.

Importations of teas are watched under the Tea Act which is enforced by the Bureau and a number of rejections of Chinese green teas were made during 1922.

WALTER G. CAMPBELL,

Acting Chief, United States Bureau of Chemistry.

CHENEY, John Vance, American author and poet: b. Groveland, N. Y., 29 Dec. 1848; d. San Diego, Cal., 1 May 1922. He was graduated from the Genesee Academy, Genesee, N. Y., at the age of 17, and was appointed assistant principal there two years later. He practiced law in New York from 1875 to 1876. He was librarian of the Free Public Library, San Francisco, 1887-94 and of the Newberry Library, Chicago, 1894-1909. He was a member of the National Institute of Arts and Letters. He published: 'The Old Doctor' (1881); 'Thistle-Drift' (poems) (1887); 'The Golden Guess' (essays) (1892); 'That Dome in Air' (essays) (1895); and many books of poems. He was editor of 'Wood Notes Wild' by Simeon Pease Cheney (1892); 'Caxton Club Scrap-Book' (1904).

CHENOWETH, Alexander Crawford, American engineer: b. Baltimore, Md., 5 June 1849; d. New York City, 13 April 1922. He was a son of the Rev. George Davenport and Frances Ann Crawford Chenoweth. He received his academic education at Dickinson College, where he was graduated in 1868 with the degree of A.B., and from which he received the degrees of M.A. in 1869 and that of LL.D. in 1908. He received his technical training at the Rensselaer Polytechnic Institute, Troy, N. Y. In 1870, Mr. Chenoweth joined the engineering force of Prospect Park, Brooklyn, N. Y., and in the following year became assistant engineer to the Middletown-New Haven Railroad Company. In 1872 he was connected with the Brunswick and Western Railroad of Georgia as assistant engineer. For a time he also served under General Greene in the Public Works Department of the city of Washington. In 1882 he was contractor for the dock and railway work of the West Shore Railroad and in 1884 was consulting engineer to General Prado, President of Peru. In the latter year he prepared the foundation on Bedloe's Island for the Bartholdi Statue of Lib-

erty in New York Harbor. In 1885 he was appointed assistant engineer of the Croton Aqueduct Commission, and from 1889 to 1895 acted as resident engineer of the aqueduct, resigning to undertake construction work for the government at Sandy Hook. He invented the Chenoweth steel concrete pile for pier and foundation work and the Chenoweth reinforced concrete revetments for maintaining the banks of the Mississippi, Missouri and Colorado rivers. He was president of the Chenoweth Revetment Company. At Inwood, on Manhattan Island, he discovered a village site of prehistoric Indians, from which was excavated the collection of implements now in the Museum of Natural History. He was awarded the John Scott medal by the city of Philadelphia in 1889 for improvement in placing electric conductors in subways and also was awarded the Edward Langstreth medal by the Franklin Institute of the same city. Mr. Chenoweth was a member of the New York Academy of Sciences; of the Society of the War of 1812, and served in the Seventh Regiment of the State National Guard.

CHESAPEAKE AND DELAWARE CANAL. See CANALS; DELAWARE.

CHESS. See SPORTS.

CHEWING GUM, Manufacture of. Under the date of 29 Jan. 1923 the Department of Commerce reported that there were 50 establishments engaged in the manufacture of chewing gum in the United States in 1921, which turned out products valued at \$38,865,000, as compared with products valued at \$51,240,000 turned out by 57 establishments in 1919 and products valued at \$17,160,000 turned out by 58 establishments in 1914. In addition, establishments manufacturing other products of chief value reported the production of chewing gum to the value of \$2,190,000 in 1919 and \$83,000 in 1914. The corresponding figures for 1921, it was stated, were not available at the time this report was issued. Persons engaged in the industry, including firm proprietors, salaried employees and wage earners, numbered 2,578 in 1921, 4,056 in 1919 and 2,689 in 1914. Salaries and wages paid out amounted to \$3,343,000 in 1921, \$4,527,000 in 1919 and \$1,648,000 in 1914. Materials used cost \$19,908,000 in 1921, \$25,202,000 in 1919 and \$7,322,000 in 1914. Of the 50 establishments which reported products valued at \$5,000 or more in 1921, 10 were located in New York, eight in New Jersey, five each in Illinois and Ohio, three each in California and Massachusetts, two each in Kentucky, Missouri and Tennessee, and one each in Delaware, Indiana, Maine, Maryland, Michigan, Nebraska, Pennsylvania, Rhode Island, Texas and Virginia.

CHICAGO OPERA. See MUSIC.

CHICAGO, University of, a non-sectarian co-educational institution, founded 10 Sept. 1890 and located at Chicago, Ill. In 1922-23 it had a faculty of 375 members, 13,000 students, property valued at \$49,600,000 and an income of \$3,376,076. Ernest DeWitt Burton, D.D., is president.

CHICKENS. See POULTRY AND EGGS.

CHILDERS, Robert Erskine, Anglo-Irish Radical leader: b. England, 25 June 1870; executed in Ireland, 24 Nov. 1922. He was the son

of Robert Caesar Childers of England, a great Oriental scholar and author of the first Pali dictionary. His mother was Anna Barton of County Wicklow, Ireland. He was connected with Ireland from his earliest years, and had made an exhaustive study of Irish conditions. He was educated at Haileybury and Trinity, Cambridge. In 1898 he entered the British Civil Service as a clerk in the House of Commons, remaining there until 1910, when he gave up his position and prospects in order to be free for political work and writing as a Liberal and especially in the cause of Irish freedom. As a young man he had been a Unionist and Imperialist, but later changed to a Liberal and Nationalist. He wrote and spoke much for Irish Home Rule in the years 1910-14, and in 1912 published the 'Framework of Home Rule,' which has been recognized as a very able work. He first came prominently before the public in Dublin in connection with the gun-running at Howth, July 1914, at which time he was still in the British service, where he remained until the Irish convention of 1918, of which he acted as secretary. He had served during the South African War and in the World War with the Royal Naval Auxiliary Service from January to May 1916 and was awarded the Distinguished Service Cross. Ever since the peace negotiations in London in 1921, Childers had been one of the most intelligent and subtle opponents of the Irish Free State. He was tried by a military court at Portobello Barracks, Dublin, on 17 Nov. 1922, on the charge of having in his possession, without proper authority, an automatic pistol when apprehended by a party of National troops on 10 November at Annamoe House, County Wicklow. He was found guilty and sentenced to death. The execution was carried out at 7 o'clock in the morning of 24 Nov. 1922 at Beggar's Bush Barracks, Dublin. Childers was the real author of the famous 'Document No. 2,' which was attributed to de Valera, and which contained the alternative oath. (See IRELAND, subsection *Political History*.) He published 'The Riddle of the Sands' (1903); Volume 5 of 'The Times History of the War in South Africa'—his most important work (1907); 'War and the Arme Blanche,' with an introduction by Lord Roberts (1910); and 'German Influence on British Cavalry' (1911).

CHILD HYGIENE. See PUBLIC HEALTH SERVICE, UNITED STATES.

CHILD LABOR. See CHILDREN'S BUREAU, FEDERAL.

CHILD LABOR LEGISLATION. See CHILDREN'S BUREAU, FEDERAL.

CHILD WELFARE. See CHILDREN'S BUREAU, FEDERAL.

CHILDREN, Breast and Artificial Feeding of. See MEDICINE AND SURGERY, ADVANCEMENT OF.

CHILDREN, Dependent, Delinquent, Neglected and Illegitimate. See CHILDREN'S BUREAU, FEDERAL.

CHILDREN'S BUREAU, Federal. The Children's Bureau of the United States Department of Labor completed in 1922 its 10th year of service. Created by Act of Congress of 9 April 1912 and directed to investigate and report upon "all matters pertaining to the welfare of children

and child life among all classes of our people," it was the first public agency in the world whose function was to consider as a whole the problems of childhood. Similar bureaus have since been established in Belgium, Czechoslovakia, Germany, Russia, Poland and Yugoslavia, and it is reported that one is being organized in Chile.

Health of Children and Mothers.—The Bureau has been able to make only a beginning in the vast field of social research assigned to it. Infant mortality was chosen for its first inquiry, and a series of studies in 10 industrial cities was directed toward ascertaining the economic and social factors coincident with high infant mortality rates. Studies of the care available to mothers and babies in typical rural communities of 12 States were also made. As a result of the information thus obtained and analyses of available statistical data, the need for a national program for the conservation of maternity and infancy became evident, and the passage of the Maternity and Infancy Act in November 1921 has enabled the Children's Bureau to co-operate with the States toward this end.*

That the health habits formed by children of pre-school age and the kind of food provided for all growing children are of fundamental importance has not been generally appreciated. Two nutrition studies made by the Children's Bureau, one in a mountain county of Kentucky and the other in Gary, Ind., have shown the fundamental and immediate importance of education in the essentials of child care—the food requirements of children and the methods of preparing suitable meals for them and also their needs with reference to sleep, fresh air and cleanliness. The rapid development of State interest in child hygiene is evidenced by the increase from one to 46 during the last decade in the number of States that have special bureaus or divisions dealing with child health. During the year 1922 such bureaus were established in eight States.

Child Labor.—The year 1922 marked a turning point in the struggle to secure effective limitation of child labor. By the decision of the United States Supreme Court rendered on 15 May in the case of *Bailey and Bailey v. The Drexel Furniture Company*, the second attempt of Congress to set up national minimum child labor standards has been nullified. The first Federal child labor law, held unconstitutional in 1918 nine months after it became effective, was the result of 10 years of efforts to secure a Federal law which should remedy the situation caused by the great diversity in State laws. This law closed the channels of interstate and foreign commerce to the products of child labor. The second law, enacted in 1918, was based upon the taxing power of the Federal government, and levied a tax upon the net profits of industries employing child labor. In holding unconstitutional both laws the court seems to have made the issue clear; either the plan of a Federal minimum must be given up and reliance must be placed solely upon the States, or a movement must be pushed for the adoption of a Federal amendment definitely giving to Congress the power to pass a child labor law.

*The provisions of this act are summarized in another Article.

The returns of the 1920 census, taken at the beginning of a period of industrial depression and with the Federal child labor tax law discouraging their employment, show fewer children under 14 and under 16 gainfully employed than did the census of 1910, but the decline is much less than it should be.† Over a million children (1,060,858) between the ages of 10 and 16 or almost one-tenth of the total number of children of that age in the country were reported in 1920 to be "gainfully employed." Children under 14 who were gainfully employed numbered 378,063. The census gives no information as to gainfully employed children under the age of 10 years, but it is known that there are many, especially in such occupations as agriculture and street trades.

Three-fifths of the children reported to be employed (647,309 or 61 per cent) were engaged in agriculture, chiefly as farm laborers; 17.5 per cent (185,337) were employed in manufacturing and mechanical industries, canneries and workshops. Over 80,000 children were employed in clerical occupations, 63,000 in trade, and 54,000 in such occupations as domestic service. The proportion of children who were gainfully employed ranged from 3 per cent in three Pacific Coast States to 17 per cent in the east south central States comprising Kentucky, Tennessee, Alabama and Mississippi.

The 1920 census figures showed an apparent decrease since 1910 of 46.7 per cent in the number of children at work. A considerable part of the decrease, however, was probably more apparent than real. The change in the census date from 15 April 1910 to 1 Jan. 1920 undoubtedly affected the proportion of children reported as engaged in farm work and perhaps in other seasonal occupations. The beginning of the industrial depression must have had an effect on the returns. That part of the decrease which is real is doubtless due chiefly to the enactment and strengthening of legal regulations. Since the 1920 census was taken the protection of the Federal child labor tax law has been withdrawn.

During the decade 1910–20 in at least half the States the minimum age laws were strengthened either by raising the age or by increasing the number of occupations to which the law applied, or in both ways; and in many States these measures were supplemented by raising the educational, physical, or other requirements which must be met before a child can go to work. With respect to hours of work, night work and compulsory school attendance, advances were made in many States, and the administrative provisions of child labor laws were strengthened. Laws providing for part-time school attendance of working children were passed in 22 States.‡ Further changes were made in 1921, and in 1922, a year in which only eleven State legislatures met in regular session, legislation relating to compulsory education or child labor was passed in six States. Nevertheless, at the time the Supreme Court decision of 15 May 1922 was rendered, only 13 States—Alabama, Connecticut,

† Fourteenth Census of the United States, 1920. Population: Occupations of Children.

See also U. S. Children's Bureau: *Child Labor in the United States. Ten Questions Answered.*

‡ U. S. Children's Bureau: *Child Labor in the United States. Ten Questions Answered.*

Illinois, Indiana, Kansas, Kentucky, New York, Ohio, Oklahoma, Oregon, Tennessee, West Virginia and Wisconsin—measured up in all particulars to the standards of the Federal laws.[§]

Both the first and the second Federal child labor law sought only to establish a minimum national standard. State laws that were higher were still operative and were enforced by State machinery. Since the last Supreme Court decision was rendered a number of proposals for an amendment to the Constitution which would give Congress power to prohibit or regulate child labor have been introduced. A resolution proposing such an amendment, which would give Congress power to legislate and would also preserve to the States their right to regulate child labor, was reported favorably by the judiciary committees of both Houses of the 67th Congress. The submission of an amendment is being advocated by representative organizations of women, trade unions, the National Consumers' League, and the National Child Labor Committee.

Although three-fifths of the nation's working children, according to the 1920 census, are employed in agriculture, rural child labor has been without effective regulation. During 1922 reports have been written of field studies made by the Children's Bureau in beet-growing areas of Michigan and Colorado and in cotton-growing areas of Texas. In co-operation with the children's code commission of North Dakota a study of child labor and school attendance was made in that State, and surveys of the farm work of children and mothers in the truck-farming areas of three States—New Jersey, Maryland and Virginia—have been completed. In all these studies it was found that farm work for children means meager educational opportunities in both spring and autumn. In the truck-farming areas studied large numbers of family groups, chiefly from nearby industrial centers, were found. The children suffered from unhealthy living conditions in overcrowded camps and from absence from school and dangerously long hours of work.

State Child Welfare Commissions.—Since 1911 more than half the States, through officially appointed child welfare or children's code commissions, have been engaged in eliminating inconsistencies in their laws relating to children and determining what improvements in law or administration were necessary. During 1922 11 States have had such commissions, including one—Georgia—whose commission was appointed in December 1922. The Virginia commission reported to the legislature of 1922 and a total of 18 of 28 measures recommended were passed.

The Children's Bureau has kept in touch with these commissions and has assembled material for several. At the request of the North Dakota commission a series of studies was undertaken in that State relating to child labor in cities and in rural districts, child dependency, and neglect, delinquency, juvenile courts, mothers' pensions,

children handicapped physically or mentally, and other problems relating to children in need of special care. Similar studies, with the exception of those concerned with child labor, were made in South Dakota at the request of the child welfare commission of that State. In both these States with predominantly rural populations the need for development of the child-caring and protective work in rural and small-town communities was evident. Provision for State supervision over child-caring agencies and institutions and insistence upon proper standards of investigation and constructive work with families before the children were removed would have saved many from becoming wards of agencies and institutions.

Development of State and County Organization for Child Welfare.—The child welfare commission movement has indicated a growing sense of responsibility on the part of the State for the welfare of children. In more than half the States, bureaus or divisions dealing especially with dependent, neglected, or delinquent children have been organized, either as independent administrative units, or in State departments of public welfare or charities. In a number of States, including Arizona, Connecticut, Missouri, Nebraska, Pennsylvania and Wisconsin, such bureaus were first established during 1921 or 1922.

As State supervising and administrative work has been developed, the need for effective local action in co-operation with the State board, and directed especially toward preventive and reconstructive work, had become evident. Recent State plans for children's work include provision for public county organization in the form of a "county board of child welfare" or "county board of public welfare," with a county superintendent who is the executive officer of the board. Alabama, Georgia, Minnesota, Missouri, North Carolina, Pennsylvania and Virginia, are among the States in which public county organization for child care is being developed. The Children's Bureau has recently issued a bulletin on County Organization for Child Care and Protection, in which are described, by those in large measure responsible for their development, the methods in use in five States.

Economic Basis of Child Welfare.—The infant mortality studies made by the Children's Bureau demonstrated conclusively the relation between low earnings and high infant mortality rates. During the winter of 1921-22, the attention of the bureau was directed to another economic problem closely related to child welfare—that of unemployment.

Two studies made in a Middle Western and an Eastern city revealed to some extent the lowering of standards of care that results from a period of industrial depression. Comparison of the average monthly receipts during unemployment with the family income while the fathers were regularly employed, showed that half of a group of 203 children belonged to families in which the average monthly income had been reduced more than one-half. In one of the cities studied, a budget estimate of the cost of living had been prepared by a large manufacturing firm. For 45 out of 90 families in which comparisons were made, the average monthly

[§] These standards specified for employment in mills, canneries, workshops, factories, or manufacturing establishments, a minimum age of 14 years, an 8-hour day and a six-day week for children between 14 and 16, and no night work for children of these ages between 7 P. M. and 6 A. M.; and for employment in mines or quarries, a minimum age of 16 years.

receipts from all sources, including relief during the unemployment period, were less than 50 per cent of this budget estimate. Gainful employment of the mothers outside the home, undertaken in many of the families studied as a result of the unemployment of the father, deprived many young children of their mothers' care.

Child Dependency and Neglect.—The conservation of home life through public aid to dependent children whose fathers are dead, have deserted, or are incapacitated, has become a generally accepted policy, in theory at least. By 1921, 40 States had adopted legislation providing for such aid, and in 1922 the Rhode Island legislature made an appropriation to be used for study of the need for such assistance, as a basis for action by the next legislature. There is, however, much variation in local methods and standards of administration. A general survey of administrative practices and nine intensive studies in a number of communities have been made by the Children's Bureau. The report of these studies shows the need for consideration of the standards of living which must be maintained if the welfare of the children is to be promoted.

A study of the work of several of the leading child-placing agencies is being made by the Bureau's Social Service Division, in order to secure information regarding the best methods in use. Closely connected with this study is one being made by the hygiene division of methods of health supervision of dependent children.

The care of children born out of wedlock has been the subject of several of the bureau's studies. In August, 1922, an important step in the movement for the better legal protection of such children was taken by the National Conference of Commissioners on Uniform State Laws, which in 1920, at the request of the Children's Bureau, undertook the task of drafting a Uniform Illegitimacy Act. At the 1922 meeting, the draft, presented by a committee of which Prof. Ernst Freund, of the University of Chicago Law School, was chairman, was approved and recommended to the States for adoption. The bill provides that the parents of a child born out of wedlock owe it "maintenance, education and support," a duty not imposed by the common law nor by the laws of many States. The father is made liable for the expenses of the mother's pregnancy and confinement.

Children's Year in Porto Rico.—The first of the Bureau's studies in insular possessions were made during the year ending in May 1922, which was designated "Children's Year" in Porto Rico. The survey combined a study of conditions affecting the welfare of children on the island and means of improving and developing activities for children by enlisting co-operation of existing agencies and by bringing the island into closer contact with the child welfare resources of the United States. Various continuing activities were organized.

International Movements for Child Welfare.—Common interest in the welfare of children brought together in August, 1922, representatives of the nations of the American Continent in the third Pan-American Child Welfare

Congress, at which common problems were discussed. The International Association for the Promotion of Child Welfare, organized in 1921 with headquarters in Brussels, has been active during the year and provides a means of interchange of information and points of view. The International Labor Office, with headquarters at Geneva, has continued its interest in child labor. By November 1922, one or more of the draft conventions with reference to the work of children and young persons recommended by the first, second and third International Labor Conferences held in 1919, 1920 and 1921, had been adopted by Bulgaria, Czechoslovakia, Estonia, Great Britain, Greece, India, Italy, Roumania, The Netherlands, South Africa, Sweden and Switzerland. In October 1922, the chief of the Children's Bureau was designated by the Department of State, with the approval of the President, to co-operate with the Advisory Committee on Traffic in Women and Children of the League of Nations, in an unofficial and consultative capacity, and under reservation of any binding effect upon the United States of any recommendations that may be made by the committee. The work of the committee is directly related to the field of the Children's Bureau, which has made several studies dealing with the prevention of delinquency and the care of the girl who has become delinquent. See also MATERNITY AND INFANCY ACT, FEDERAL.

Compiled by

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CHILE, a republic of South America occupying the Pacific littoral of that continent south of Peru. It has an area of 289,829 square miles and a population of 3,754,723. It is divided into 23 provinces which in turn are divided into 82 departments and one territory. The area and population of the provinces follow:

PROVINCES	Area, square miles	Population, census of 1 Jan. 1920
Aconcagua.....	5,406	116,914
Antofagasta.....	46,408	172,330
Arauco.....	2,189	60,233
Atacama.....	30,711	48,413
Biobio.....	5,353	107,072
Cautin.....	6,381	193,628
Colchagua.....	3,851	166,342
Concepcion.....	3,313	247,611
Coquimbo.....	14,098	160,256
Curico.....	3,045	108,148
Chilo.....	6,979	110,331
Linares.....	3,969	119,284
Llanquihue.....	34,778	137,206
Malleco.....	3,303	121,429
Maule.....	2,812	113,231
Nuble.....	3,498	170,425
O'Higgins.....	2,168	118,591
Santiago.....	5,893	685,358
Tacna.....	8,999	38,912
Talca.....	3,864	133,957
Tarapaca.....	16,689	100,553
Valdivia.....	8,991	175,141
Valparaiso.....	1,775	320,388
Magallanes Territory.....	65,355	28,960
Total.....	289,829	3,754,723

The principal cities are: Santiago (507,296). Valparaiso (182,242); Concepcion (66,074);

Iquique (37,421); Antofagasta (51,531); Talca (36,078); Vina del Mar (33,441). The majority of the inhabitants are of European origin and their business and fighting qualities have earned them the sobriquet of "The English of South America." The aborigines belong to three great divisions: the Araucans, who dwell on the Andean slopes and valleys and who long disputed the mastery of the country with the white men; the Fuegians, who are mostly nomadic and live in the extreme southland, and the Changos, who live in the north and are mostly of the laboring class.

Education.—Education is free and compulsory. In 1922, there were 3,238 public schools of primary grade with a registration of 347,489 pupils and 7,500 teachers; 429 private primary schools with 991 teachers and 54,875 pupils. There are 292 secondary schools with 52,886 pupils and about equally divided between public and private schools. There are 15 public normal schools with 2,206 students and 11 commercial schools with 3,000 pupils and 176 teachers. Agricultural, engineering and other professional schools are established in sufficient number to care for the needs of the country. Higher education is provided by the National Institute of Santiago, the University of Chile and the Catholic University. The State University has a faculty of 358 and a student body of 4,502; the Catholic University has 614 students and a faculty of 116. In 1920 so-called industrial universities were established at Concepcion and Valparaiso. In 1920 the republic spent \$7,918,295 on primary, secondary and normal training.

Religion.—The Roman Catholic is the state religion but all denominations are permitted and protected. The Roman Church has one archbishop at Santiago, three bishops and four vicariates apostolic.

Production and Industry.—Chilean territory differs greatly from north to south. There

were in 1922 96,000 farms. The acreage and production of the principal crops in 1920 are shown in above table.

The production of wheat, barley and oats declined in 1921 to 312,853 tons wheat, 58,618 tons barley and 19,706 tons oats. Dairy farming has been extended in recent years and the raising of sheep has become a very profitable venture in Patagonia and in Tierra del Fuego. There are in the Republic 2,163,141 head of cattle, 4,500,196 sheep, 459,606 goats, 291,431 swine, 42,019 alpacas, 51,411 mules and 391,718 horses.

Mining, however, is the chief industry of the country and the mining region is in the northern provinces. Chile is the second largest producer of copper in the world. The minerals obtained are gold, silver, cobalt, and manganese while the non-metallic minerals are coal, nitrate, guano, salt and borate. Nitrate of soda is the country's chief article of export, being sent out of the country at the rate of 2,750,000 metric tons yearly. Coal production is on the increase and is now about 1,500,000 tons yearly. In 1922, nitrate exports were below normal, being only 400,000 metric tons for the first seven months of the year. The total stocks of nitrate in Chile on 30 June 1922 were reported at 1,607,000 metric tons. Copper mining in 1922 felt the impetus of stronger prices abroad, with the result that both American and locally-owned mines intensified production. Evidence of the betterment was reflected in the exports of refined copper during the first seven months of 1922 which totaled 70,000 metric tons, or nearly double that of the year previous.

Manufactures.—The last industrial census reported 2,871 manufacturing establishments of factory grade, giving employment to 71,464 persons, using materials valued in the raw state at 517,832,812 gold pesos and turning them into a finished product valued at 905,151,651 gold pesos.

Commerce.—Both imports and exports increased in 1922. Although the imports were still generally below the level of 1921 by the end of July, the customs collections from imports during that month rose to 40 per cent above those of the preceding month of June. In 1920 the total foreign trade of the republic amounted to \$465,000,000, of which \$293,000,000 represented exports. The products of the mines, live stock and agriculture formed the great bulk of these exports, while textiles, chemicals, metals, foodstuffs and machinery formed most of the imports. In the same year the United States was the largest purchaser of Chilean goods and also furnished more of the imports than any other country.

Chilean Telegraphs and Telephones in 1920.—The annual report of the Chilean state Telegraphs and Telephones for the year of 1920 is summarized as follows:

CROP	Acreage	Yield (long tons)
Wheat.....	1,192,722	542,039
Barley.....	127,325	80,372
Oats.....	65,190	37,590
Indian corn.....	62,662	36,727
Beans.....	113,875	45,957
Peas.....	28,202	11,441
Lentils.....	4,827	1,670
Potatoes.....	76,480	282,414
Grapes.....	218,000	26,022,416 gallons wine

is an arid zone in the north, the central part of the republic is well adapted to agriculture and the south is mostly under forest. There are about 42,000,000 acres of agricultural land, 9,500,000 acres of forest, and 18,000,000 acres of pasture land in the republic. There

NAME OF SERVICE	Number of employees	Number of offices	Kilo-meters of line	Kilo-meters of wire	Number of calls or messages	Number of words
State telegraphs.....	1,426	374	15,789	29,715	4,388,000	67,539,000
State railway telegraphs and telephones.....	662	422	17,996			
Telegraphs privately owned.....	1,818	245	10,376	21,632	5,335,112	106,746,571
Telephones privately owned.....	1,295	444	83,654	153,856		

The privately owned telephone companies had 24,495 subscribers, divided among 12 different companies. The total receipts were 6,469,037 pesos currency, and the total expenditures 4,109,078 pesos.

Railways, Etc.—There were in operation in Chile in 1922, 5,403 miles of railway, of which 2,270 were the property of private owners and 3,133 miles the property of the state. Electrification of the railways began in 1921 and progressed throughout 1922 although slowly because of the general depression and stagnation in world trade which was reflected in government revenue and in government projects. It was decided to begin the construction of locomotives in Chile. This work was begun during the year, but being in its infant stage, this industry is yet unable to meet the natural demand.

Army and Navy.—Military service is compulsory for all citizens from the age of 18 to 45 years. Active training begins at the 20th year and lasts one year. The total armed strength of the land armies in 1922 was 23,176 officers and men. The military budget the same year was about \$11,430,000.

The navy has one dreadnought, one pre-dreadnought, two armored cruisers, four protected cruisers, fourteen destroyers, six submarines and three torpedo boats.

Finance.—On 31 July 1922, the amounts of paper currency outstanding was reported to be 265,585,000 pesos as against 290,000,000 a month before, and 324,600,000 at the beginning of the year. About 30,000,000 paper pesos of the 135,000,000 paper pesos loan was reported in August as being placed with the local banks, the balance to be secured abroad. The budget for 1922, passed by the Congress late in August, provided for disbursements of 74,000,000 gold and 349,000,000 pesos paper. It was deemed unlikely that the revenues for the year would reach the anticipated expenditures. However, the customs collections showed a healthy trend, amounting for the month of July to 7,500,000 pesos gold. The foreign debt of the nation amounts to \$135,670,560 and the internal debt to \$33,160,106. The national budget for 1923 amounts to 58,000,000 gold pesos and 287,000,000 paper pesos. Paper money in circulation on 31 August was 267,000,000 pesos.

The Chilean national debt includes dollar and sterling loans to the government of the republic and to municipalities whose bond issues were guaranteed by the national government, also internal funded debt. The following table shows the total debt with details of the loans contracted in the United States, reduced to American dollars:

	Outstanding
1922 7 per cent National City Co.....	\$18,000,000
1921 8 per cent Blair & Co.....	10,080,000
1921 8 per cent Blair & Co.....	9,500,000
1921 8 per cent railroads, Guaranty Trust Co.	21,900,000
1915 6 per cent Valparaiso, Guaranty Trust Co.....	240,600
Total of dollar loans outstanding.....	\$59,720,600
Sterling loans to national government (£35,836,108).....	174,376,499
Sterling loans to municipalities (£1,023,487) ..	4,980,287
Total of foreign debt.....	239,077,386
Internal funded debt (100,418,322 gold pesos) ..	36,652,688
Total national debt outstanding.....	275,730,074

The government mortgage bank (Caja de Credito Hipotecario) has outstanding bonds to the face value of 772,869,100 paper pesos, equivalent at exchange 25 cents to the peso to \$194,967,275. At this rate of exchange, holdings in the United States may be estimated at \$10,000,000. These bonds are not specifically secured by the national government, but the bank is exclusively a government institution. A parcel of 1922 8 per cent internal bonds, aggregating 10,000,000 paper pesos, was sold in the New York market by Kelley, Drayton & Co. The value is about \$2,500,000. It is estimated that about 20 per cent of the sterling debt is held in the United States, or about \$35,871,000. Thus the total value of Chilean bonds held in the United States may be estimated at \$108,000,000.

Government.—The executive power is vested in a President who is chosen for a term of five years through electors who themselves are chosen by popular vote. A President is not eligible for re-election. The National Congress consists of two chambers—the Senate and the Chamber of Deputies. The Senate has a membership of 37 elected by popular vote for a term of six years and by provinces. The Lower House has 111 members elected for terms of three years, there being one representative for every 30,000 of the population. Electors must be 21 years of age and be able to read and write. The President is assisted in his functions by a Council of State of 11 members, of whom five are nominated by the President and six are chosen by the National Congress. He is also assisted by a Ministry of six departments. The head of a province is called the Intendente and the departments, as the provincial subdivisions are called, are ruled by Gobernadores. The departments are further divided into municipal districts over each of which there is a council of nine members elected by the voters of the district for terms of three years.

History.—As Chile is one of the few South American countries where peace is maintained without fear of overshadowing revolution, a steady progress has been kept up for many years. As she, together with the Argentine, remained neutral during the World War, her trade and commerce attained, during that period, remarkable proportions. The natural reaction began in 1920; but the fall of 1922 saw a return to normal. The government continued the policy of improving the ports, reorganizing the army and building up the war and mercantile fleets. Special attention was paid to the latter with a view to increase the volume and effectiveness of the coast trade, which was quickened toward the close of the year. But the earthquake of November 1922 badly damaged the ports. The government took advantage of this to further improve some of them while making the necessary repairs occasioned by the earthquake and to lay out extensive plans for further improvements. The above-mentioned earthquake, the most disastrous which Latin-America has seen in many years, laid in ruins several Chilean towns; and huge tidal waves engulfed the ports of the disturbed region; Copiapó, an inland city of considerable size, was leveled to the ground. Here, as in other towns visited by the earthquake, hundreds of people lost their lives; and

to this holocaust the ocean added its share of victims. The port of Chanaral was swept out of existence. Owing to the low price of salitre, Chile's chief export, the general export business of the country decreased; but, in compensation, new markets were found in China and Japan, both of which largely increased their commercial relations with Chile, taking a part of the overplus of salitre left on the market by overbuying in Europe and unrestrained speculation. Copper began to get on its feet again and large shipments were made to Great Britain, Germany and the United States. The tendency of the year showed Great Britain again entering strongly into the Chilean market and conquering her pre-war supremacy. While Chile is one of the best provided of the South American countries with railways, having one long line extending throughout practically the whole length of the republic, and numerous short feeders running to the Pacific coast and to the mountains, yet the year saw additional short branches built for the encouragement of commerce and trade and the more facile exploitation of the less accessible mining regions and the salitre country.

Much foreign capital entered Chile in 1922, largely from the United States and Great Britain, both of which made extensive investments in copper mines, of which they now have the control. Immigration began to show signs of quickening, the immigrants being, for the most part, people from European countries with sufficient means to help themselves; and these brought further capital into Chile. Working in conjunction with Peru, Chile made an attempt, in 1922, to settle the disagreement between the two nations over the three provinces Tarata, Tacna and Arica, the ownership of which has been in dispute since 1883. Early in the year the ambassadors of both countries got together and, after considering the question at length, finally agreed to ask the President of the United States to arbitrate the matter. The latter invited the two nations concerned to send representatives to Washington. This was done and a provisional agreement looking to a final settlement of the question was reached. Submitted to the respective legislatures of Chile and Peru this preliminary agreement was sanctioned in the fall of 1922.

CHINA, a republic of eastern Asia on the Pacific Ocean. Its area is 3,913,560 square miles and the population numbers 325,000,000, according to the most conservative estimates. Peking is the capital. For president and cabinet officers see **RECENT HISTORY** section of this article. The republic is divided into eighteen provinces of China proper and the new territory of Sinkiang, the dependencies of Manchuria, Fengtien, Heilungkiang and Kirin, and Mongolia and Tibet. The population figures given above are the Rockhill estimate which is much lower than that of the Chinese Maritime Customs which in 1920 gave the huge total of 420,000,000 for China and Manchuria. Peking, the capital, has a population of about 1,000,000, of whom 4,000 are foreigners. In the entire Republic there are, according to the estimates of the Chinese customs authorities, 326,969 foreigners, including 153,918 Japanese and 144,413 Russians. The next largest foreign groups were the British of 11,082 and the American of 7,000.

Agriculture.—Agriculture is a most important industry in China which is a land of small farmers who might even be termed horticulturists because of the intensive cultivation they give their diminutive plots. Fruits and vegetables are grown in the most expert fashion. The crops vary according to the latitude, wheat, corn, barley and other cereals being chiefly grown in the north while cotton, rice, sugar, tea and indigo predominate in the south. China is the world's third largest producer of cotton, yielding precedence in this crop only to the United States and India. China's cotton crop in 1920 was 6,696,612 piculs of 133½ pounds. Over 500,000 acres are planted to tea in the south and west. Exports of tea have suffered a decline in recent years and in 1920 amounted to 1,305,906 piculs of 133½ pounds. Silk production is carried on on a large scale, China furnishing 30 per cent of the world supply. The latest reports show a yearly crop of 73,078,709 piculs. Hogs are raised throughout the country and their bristles figure large in the exports. There are no statistics available relative to the supply of livestock.

Mining.—China has extensive coal deposits and in every province it is mined. The annual output of coal is 19,000,000 tons. Iron ore is also plentiful and in several places is found in conjunction with coal. The Shansi iron industry is the oldest in the world. There is a rich copper deposit in the province of Yunnan. There are 100 oil wells in operation mostly along the upper Yangtse. Antimony is exported, China furnishing over half the world supply. Tin, gold, lead and bismuth are also worked. Most of the mining is conducted along primitive lines but in recent years modern methods have been introduced especially in the coal districts and at present about half of the coal mined is according to modern systems.

Commerce.—Of the internal trade of China it is impossible to give accurate statistics or even an estimate which might be regarded as approximately correct. Regarding the external or foreign trade it is possible to render accurate figures.

To make any discussion of comparative Chinese trade figures for recent years of value, two important facts must be kept in mind: (1) The abnormal rise in the price of silver, China's currency, and (2) the fall in commodity prices in general in combination with the fall in the price of silver relative to gold. Whereas values quoted in silver through 1919 and part of 1920 unduly magnify the values given, those from that date forward tend to lessen the real comparative value.

The table on the following page shows the value of the leading articles imported directly into and exported directly from China in 1913, 1920 and 1921. (The average value of the haikwan tael was about 73 cents in 1913, \$1.23 in 1920, and 76 cents in 1921.)

Communications.—There are numerous canals and navigable rivers and a large portion of the internal commerce of the country is carried over them. Many of the canals are over a thousand years old. The roads are numerous but from a modern viewpoint they are little better than dirt paths; yet a vast trade is carried on by these. Improved roads

PRINCIPAL ARTICLES ENTERING INTO CHINA'S DIRECT TRADE WITH FOREIGN COUNTRIES

(Compiled by U. S. Department of Commerce)
[Thousands of haikwan taels]

DESCRIPTION OF GOODS	1913	1920	1921
IMPORTS			
Cotton goods.....	182,420	246,813	208,663
Woolen goods.....	4,880	4,791	7,408
Metals and minerals.....	29,156	61,572	60,077
Bags of all kinds.....	3,115	10,110	10,068
Bêche-de-mer.....	1,166	1,911	2,180
Bran.....	3,315	2,543	5,151
Candles.....	580	1,305	982
Cement.....	608	1,860	3,656
Cereals.....	18,622	6,253	42,239
Cigarettes.....	12,589	22,030	24,913
Coal.....	9,421	14,375	13,790
Cotton, raw.....	2,984	17,993	35,867
Dyes.....	9,633	15,306	15,260
Fish, and products of.....	12,975	13,306	14,288
Flour.....	10,301	2,330	3,504
Gasoline, etc.....	108	1,674	2,728
Ginseng.....	1,649	1,546	1,904
Glass, window.....	1,142	3,460	2,032
Kerosene.....	25,403	54,318	58,077
Leather.....	7,179	7,023	8,367
Matches.....	6,341	2,966	1,678
Needles.....	1,045	1,756	794
Paper.....	6,121	13,102	13,258
Soda.....	1,128	2,309	1,776
Sugar.....	36,307	39,080	71,458
Timber:			
Hard.....	1,074	2,900	4,073
Soft.....	3,881	9,150	3,966
Tobacco.....	3,573	12,939	14,270
Total.....	396,716	374,725	632,427
EXPORTS			
Nankeens.....	2,359	4,217	4,671
Iron:			
Pig and unmanufactured.....	1,320	7,284	5,387
Ore.....	610	2,612	1,511
Tin, in slabs.....	10,917	11,098	6,001
Ores, unclassified.....	53	1,565	1,218
Animals, living:			
Cattle.....	3,078	2,134	1,455
Pigs.....	2,721	2,213	2,508
Beancake.....	24,963	41,959	49,525
Beans.....	23,297	27,396	34,281
Bran.....	1,163	2,579	4,343
Bristles.....	4,435	6,224	4,219
Camphor.....	129	2,840	1,424
Cereals:			
Wheat.....	4,762	25,395	16,886
Others.....	4,752	11,242	2,295
China ware.....	2,132	5,624	5,277
Cigarettes.....	365	8,668	13,471
Coal.....	6,592	12,215	11,228
Cotton, raw.....	16,236	9,225	16,483
Eggs and products.....	5,732	16,923	23,274
Feathers.....	1,484	1,034	769
Fibers:			
Hemp.....	626	1,357	1,287
Ramie.....	2,489	2,834	2,794
Firecrackers.....	3,200	3,372	3,616
Firewood.....	755	1,034	1,381
Flour, wheat.....	610	18,252	9,366
Grass cloth.....	1,566	3,594	3,626
Groundnuts.....	5,038	6,049	7,126
Leather.....	593	1,144	793
Licorice.....	336	1,635	2,384
Mats and matting.....	3,839	3,968	2,933
Meats.....	1,792	3,274	2,569
Oil:			
Bean.....	3,732	14,795	9,736
Groundnut.....	2,833	9,316	4,513
Paper.....	3,182	3,957	4,539
Seeds:			
Rape.....	1,942	1,005	4,397
Sesamum.....	12,372	10,830	8,812
Seedcake.....	1,411	1,849	2,592
Silk:			
Raw:			
White.....	61,028	54,017	80,320
Yellow.....	5,312	6,361	12,612
Wild.....	7,169	7,074	18,489
Cocoons.....	2,328	1,195	2,719
Waste.....	6,673	7,024	5,991
Piece goods and pongees.....	20,874	24,318	30,274
Skins and hides undressed:			
Buffalo and cow.....	15,184	8,215	6,533
Goat.....	4,068	8,112	4,298

DESCRIPTION OF GOODS IMPORTS

	1913	1920	1921
Straw braid.....	5,074	4,487	3,452
Sugar.....	448	3,077	2,378
Tallow, animal.....	1,276	1,362	941
Tea.....	25,278	8,548	12,227
Tobacco.....	2,556	6,579	5,201
Vegetables.....	2,502	1,233	1,455
Macaroni.....	2,774	2,066	2,813
Wool:			
Camels'.....	797	1,729	1,293
Sheep's.....	5,488	3,091	11,317
Total.....	332,246	439,250	481,003

PRINCIPAL COUNTRIES SUPPLYING CHINESE IM- PORTS OF COTTON PIECE GOODS

IMPORTED FROM	1913	1920	1921
	<i>Pieces</i>	<i>Pieces</i>	<i>Pieces</i>
Great Britain.....	11,705,426	5,784,026	3,489,093
United States.....	2,281,123	563,583	626,233
Japan.....	5,716,594	7,034,458	5,815,965
Other countries.....	91,714	54,567	448,530
Total.....	19,794,857	13,437,634	10,379,821

are few. China has about 7,000 miles of rail-ways of which 2,000 are in Manchuria. About 2,000 miles are under construction. All the railways are subject to the ministry of communications, with the exception of 773 kilo-meters which are privately owned.

The Chinese government bureau of informa-tion reports that operations of the Chinese rail-ways in 1921 resulted in a net income of \$23,712,000. This compares with a net income after charges of \$40,788,000 for the previous year. Operating revenues totaled \$95,218,000 in 1921, as against \$91,444,000 in 1920.

The following table gives a comparison of earnings of the Chinese government railways in 1921 and 1920:

RAILWAY	Operating revenues	Net income
Peking-Hankow.....	\$24,500,000	\$7,000,000
Peking-Mukden.....	25,484,000	12,050,000
Tientsin-Pukow.....	16,780,000	3,661,000
Peking-Sulyuan.....	5,109,000	1,025,000
Shanghai-Nanking.....	6,921,000	1,685,000
Shanghai-Hangchow-Ningpo.....	3,259,000	113,000
Canton-Talyuan.....	3,334,000	1,634,000
Taokow-Chinghua.....	695,000	256,000
Honan-Kaifeng.....	2,017,000	1,273,000
Kirin-Changchun.....	2,763,000	809,000
Chuchow-Pinghsiang.....	611,000	37,000
Canton-Kowloon.....	1,287,000	316,000
Changchow-Amoy.....	34,000	144,000
Changsha-Wuchang.....	1,672,000	2,262,000
Ssuningchich-Tsenkiatun.....	752,000	321,000
Total, 1921.....	\$95,218,000	\$23,712,000
Total, 1920.....	91,444,000	40,788,200
Increase.....	\$3,774,000	\$17,076,000

The report states that the decrease in net earnings in 1921 as compared with 1920 was due to the unfavorable rate of exchange and the high rate of interest.

There are 50,000 miles of telegraph lines which connect all the chief cities of the country and also connect with the lines of adjoining countries. There are also wireless stations both telegraph and telephone, some of which have a range of 1,000 miles. The chief cities have individual telephone systems which are being

connected up by the government for purposes of long distance communication.

The postoffice service is well organized. There are 11,000 postoffices in operation the revenue from which in 1920 was \$13,000,000 and the expenditures for maintenance slightly less than \$11,000,000, leaving a surplus of \$2,212,069. Foreign postoffices, except those in leased territories, were withdrawn 1 Jan. 1923.

Banking.—Modern systems of banking were unknown in China until a comparatively recent date. Banking, as we know it, began after the suppression of the Tai-ping rebellion, but it was not until the opening years of the present century that the present system was introduced. In 1902 was established the Ta Ching Bank with a capital of 4,000,000 kuping taels, afterwards increased to 10,000,000 taels. Four years later the Bank of Communications was founded and since then new banks have been founded frequently so that at present there are 123 banks with 312 branches. These banks have an aggregate capitalization of \$350,000,000. There are 400 savings banks and about 100 postal savings banks.

Finance.—The official estimates place the revenue at 495,000,000 kuping taels annually and the expenditures at approximately the same amount. The revenue on the foreign trade is collected by the Chinese Maritime Customs which pays it into specially designated foreign banks from which allotments are paid on the foreign loans secured on the customs revenue and the Boxer indemnity similarly secured. For changes in the tariff schedules and other financial and fiscal matters see RECENT HISTORY section of this article.

Boxer Indemnity. With partial decisions already made as to the disposition of outstanding balances on the Boxer indemnity account, there has been much discussion in the Far East regarding the future policy to be adopted by the powers with regard to this question, which has such an important bearing on Chinese governmental finance. There have been announcements

outstanding indemnity to refinancing the Banque Industrielle de Chine. The above table, compiled by the Far Eastern Division of the Department of Commerce, is a statement of the status of the Boxer indemnity account on 1 Dec. 1922, gathered from official Chinese sources, the conversions to United States currency being made at current rates of exchange on that date. The Boxer indemnity payments were suspended on 1 Dec. 1917, and resumed on 1 Dec. 1922.

Religion.—Buddhism, Confucianism and Taoism are the three great religions of China. Of these Confucianism is mostly a philosophic moral code without ritual and ceremonial. Most Chinese practice the tenets of all three religions. There are about 10,000,000 Mohammedans, 1,994,483 Roman Catholics attended by 963 Chinese priests and 1,365 European priests, and 618,601 native Protestant Christians served by 1,275 ordained clergymen. There is also a Russian Orthodox mission with 6,000 Chinese converts and 20,000 Russian followers and a colony of Chinese Jews in the province of Honan.

Education.—The new educational movement which had its inception in 1905 received a tremendous impetus with the establishment of the republic and the demand for Occidental learning owing to the ever increasing intercourse with Western peoples. There are at present in China 125,000 primary schools, divided into the so-called lower and higher primary. There are industrial schools also of two grades offering technical and vocational courses. These schools number over 400. There are three government universities and four supported by private funds. In addition there are 531 technical schools of higher grade attended by 32,275 students. It is proposed to make primary education free and compulsory as soon as internal conditions permit. For medical education in China, see ROCKEFELLER FOUNDATION.

Courts.—The system of justice has been reorganized in recent years. Civil, criminal and commercial codes based largely on Continental models are being put in force and the old system of torture and extortion has disappeared forever. There are 90 higher courts and 102 district courts at the head of which is the supreme court and procuratorate-general. The jury system was introduced in 1912. The United States and Great Britain maintain special courts in China but in view of the agreements made at the Washington conference in 1921-22 it is probable that these courts will be discontinued in the future. The prison system also has been reformed since the advent of the republic and there are now 48 modern prisons in the country.

Recent History.—Three leaders—Chang Tso-lin, Wu Pei-fu, and Sun Yat-sen—stand out prominently in recent Chinese history among a host of meaningless names. All three profess irreproachable sentiments. All insist upon one united government, and in different degrees proclaim the necessity for a parliamentary basis. Each of these men, however, represents elements that seem to be incompatible with each other. Nor is it clear how far each of them is sincere in his professions.

At the outbreak of the revolution the Manchus employed Yuan Shih-kai, whom they had previously broken because of his growing power, to organize resistance, and that worthy paid off

COUNTRIES TO WHICH DUE	Amount due in original currency	Equivalent value in United States currency
France ¹.....frances	391,581,520	\$27,489,023
Great Britain, ² pounds sterling	11,186,547	50,560,958
Japan ³.....yen	72,121,578	34,986,177
United States ⁴.....dollars	12,455,507	12,455,507
Italy.....frances	147,051,159	10,322,991
Belgium.....frances	46,873,522	3,290,521
Portugal.....pounds sterling	20,386	92,141
Russia.....rubles	254,343,251	(5)

¹ Funds to be used partly for Sino-French educational purposes and partly for refloating the Banque Industrielle de Chine. ² Remittance for purposes mutually beneficial to China and Great Britain now under discussion. ³ Remittance for purposes mutually beneficial to China and Japan now under discussion. ⁴ Remission proposed. ⁵ No exchange available.

from both British and Japanese quarters that some modification of the procedure followed by the United States (remitting part of the indemnity funds, which was used subsequently by China for educational purposes) may be adopted by them. An agreement has been signed devoting a large part of the French portion of the

old scores by selling them and engineering himself into the position of president of the new republic. No sooner was Yuan established, largely through the reorganization loan of £25,000,000 provided through the instrumentality of the foreign powers in 1913, than he decided to restore the Throne with himself as occupant. A rebellion broke out in Yunnan, which the Japanese, disgusted with Yuan because he did not concede the whole of their preposterous XXI Demands in 1915, financed and otherwise assisted. The monarchy movement was defeated and Yuan died of overwork and disappointment, in one way a great loss to his country, for he stood head and shoulders above his fellows, though sorely misguided in the policy that ruined him.

There remained after the death of Yuan two principal elements, the revolutionary party in the south, in military control of several provinces, and the old northern army organized under the Manchus and officered by men of the old school. The heads of this army retained control of the Northern provinces, and in themselves represented the spirit of Manchu rule. They recalled the parliament dismissed by Yuan, but soon quarreled with it, thereby definitely splitting the country into what was thereafter called North and South. The North sought to conquer the South, but after two campaigns, mostly conducted in Hunan, failed decisively, principally because the northern army was divided into two factions, called Anhui and Chihli, and was not united in its efforts.

It was during this period that the Japanese lent enormous sums to the northern government in the expectation that success would be achieved and attributed to the assistance of Japan.

During 1918 and 1919 all endeavors to effect a settlement between North and South failed, but neither side was able to resume the struggle, the North because Japanese supplies had run dry, the South because it was financially exhausted. In the South there was the Canton military government, representing the provinces of Kwangtung, Kwangsi, Yunnan, Kweichow and Szechuan.

The government, indeed, was under the thumb of Japan, partly because of the outstanding debts, and partly because without Japanese countenance it was liable to collapse.

At this period entered into politics Brigadier-General Wu Pei-fu, protesting against the selling of the country to the Japanese. This officer commanded a division in Hunan, peacefully confronting the southern army during two years of armistice. He had been steadily increasing his forces, and though originally in command of one division, in 1920 his troops aggregated about four divisions. His superior officer was Tsao Kun, Tuchun of Chihli, and head of the Chihli faction.

The Pekin government was controlled by the Anhui party, largely transfused into the Anfu club. In the summer of 1920 Wu Pei-fu moved north into Chihli province with the avowed object of destroying the pro-Japanese government. In one attack he defeated the Anfu army near Pekin, and it is significant that the forces armed, equipped, and paid with Japanese money,

and trained by Japanese instructors, melted away at the first onset, a sad blow to the Japanese general staff, whose policy of years was utterly confounded.

Wu Pei-fu probably would not have ventured upon his crusade but for the fact that Chang Tso-lin, Tuchun of Fengtien province in Manchuria, took the Chihli side in this affair and brought troops into the field which took a minor share in the operations. After the victory, however, it was Chang Tso-lin who occupied Pekin and reformed the government.

From this time onward Chang Tso-lin and Wu Pei-fu were political rivals. Chang Tso-lin was promoted Inspector-General of the three Manchurian provinces of Fengtien, Kirin, and Heilungkiang, and Wu Pei-fu was awarded a minor appointment. Chang Tso-lin occupied Pekin with a division and stationed two brigades in the near neighborhood. Wu Pei-fu retired to a camp at Loyang, near the point where the Pekin-Hankow Railway crosses the Yellow River. Chang Tso-lin's career indicates that he is an autocrat by temperament.

Wu Pei-fu all along advocated a national convention and government on a popular basis. His ambition was to make his country strong enough to resist Japanese aggression. Chang Tso-lin, on the other hand was compelled to bow to the Japanese, who were dominant in South Manchuria after the Russo-Japanese War. Since the assertion of his power in Pekin Chang Tso-lin repeatedly reformed the government, without successful result. Liang Shih-yi, whom he appointed premier in December 1921 was driven to take leave by the threats of Wu Pei-fu.

Far away in South China is Sun Yat-sen, temporarily president early in the revolution and until August 1922, with intervals, leader of the southern government. The Canton military government broke up in 1920, and the five provinces concerned drifted apart.

Next year, however, Sun Yat-sen, assisted by General Chen Chiung-ming, a product of the revolution, recovered control of Kwangtung, and formed a new government at Canton, without the adherence of the other four southern provinces. Kwangtung then successfully fought the adjoining province of Kwangsi, thereby giving Canton control of both provinces. Sun Yat-sen then projected the invasion of the North. He professed to have the adherence of Yunnan, Kweichow, and Szechuan in this enterprise, but there was so much confusion in those provinces that it is difficult to believe them capable of pursuing any external policy.

Sun Yat-sen naturally endeavored to get into touch with Wu Pei-fu with a view to jointly opposing Chang Tso-lin. The two were never able to come to terms, and Wu Pei-fu, by crushing a Hunan movement inspired by Canton, incurred the enmity of Sun Yat-sen. Sun Yat-sen therefore found Wu Pei-fu blocking his road to the North. Chang Tso-lin, on the other hand, perceived in Wu Pei-fu an obstacle to his own domination of the North.

Chang Tso-lin and Sun Yat-sen, therefore, were supposed to have allied themselves at the end of 1921 with a view to destroying Wu Pei-fu. Chang Tso-lin's movement of troops into Chihli forced Wu Pei-fu to bring his troops

away from the Hunan-Hupeh border at Yochow to his base at the Yellow River.

Wu Pei-fu thus had Sun Yat-sen at his back and Chang Tso-lin in front, and at the beginning of 1922 it remained to be seen whether he would advance and give battle to Chang Tso-lin or succumb to pressure being put upon him.

Observers did not have long to wait for on 18 Dec. 1921, the cabinet at Peking was forced to resign through pressure exerted to that end by Gen. Chang Tso-lin, the powerful leader of Manchuria who had arrived in the capital a few days previously. The general had disposed his troops in and around the city and his dictation was at once obeyed. He set up a so-called strong cabinet, which took office on 25 Dec. 1921. This cabinet was made up as follows:

Liang Shi-Yi, Premier; W. W. Yen, Minister of Foreign Affairs; Chang Hu, Vice-Minister of Finance; Pao Kwoi-Ching, Minister of War; Li Ting-Hsing, Minister of the Navy; Yeh Kun-Cho, Minister of Communication; Wang Chung-Hui, Minister of Justice; Chi Yao-Shan, Minister of Commerce; Kao Ling-Wei, Minister of the Interior; Huang Yen-Pei, Minister of Education.

According to General Chang, his motives were to have a new constitution adopted which would be more suitable to the temperament of the Orient than the existing constitution; the betterment of the financial situation through the ousting of incompetent or patently dishonest officials and a general program of reform. The authority of the new cabinet was soon challenged in South China, where the government at the beginning of the year issued an order for the arrest of the Premier as a traitor. The chief opposition, however, came from Wu Pei-fu, the Inspector-General of the provinces of Hunan and Hupeh, who charged the new cabinet with being the tools of the Japanese. On 15 January he sent an ultimatum to Premier Liang demanding his resignation and that of his cabinet within three days and threatening to publish further charges if this demand was not complied with within five days, and to march on Peking if Liang took no action within seven days.

Liang, the Premier, met the ultimatum with defiance and civil war became imminent. In view of the threatened hostilities the United States, on 16 January, placed an embargo on shipment of arms and ammunition to China. Later in the month the Chinese President announced that he had granted a leave of absence to the Premier and had appointed Dr. W. W. Yen as acting Premier. The financial situation continued to harass the government. The consortium loan of 14,000,000 taels was secured by the salt revenues, while the Japanese loan was being liquidated in monthly installments from the salt surplus. Various complications reduced the available funds raised by the consortium loan to 6,000,000 taels, a sum insufficient to meet the payment of back salaries due to government officials. About 1 March it developed that Gen. Chang Tso-Lin sought an alliance with the government of Sun Yat-Sen at Canton, the avowed enemy of the Peking government.

Relations between Chang and Wu became more and more strained and civil war soon was seen to be inevitable. The latter remained entrenched in Hunan awaiting the attack of the troops led by Chang and moving from Tientsin and Shantung. Fighting being expected in Chihli and Hunan, many wealthy Chinese sought safety in the foreign concessions at Tientsin. The fighting began with preliminary skirmishes on 26 April, followed by a general engagement the next day. General Chang directed the operation of his troops in person from Chut Liang-Cheng, about 15 miles east from Tientsin, while General Wu was about 50 miles to the south of Peking directing an attack on Lang Fang. A fiercely contested battle ensued for the possession of Machang. Wu's forces were temporarily checked in some quarters but reinforcements were brought up and the tide of battle turned. By 29 April the fighting had reached Changtsin-tien, 12 miles southwest of Peking. In the latter city the gates had been closed and the government had been warned by the foreign legations that the fighting must not be extended to the city. On the last day of April the fighting front extended from Machang westward to Paoting-fu and thence north to Changtsin-tien. The cannonading ceased on the morning of 2 May and by the 4th it was definitely learned that victory rested with General Wu. The bodies of over 2,000 soldiers lay on the battlefield and thousands of the troops of Chang were dispersed to the hills. On 5 May the victory of General Wu was recognized by Peking and the guard of General Chang was disarmed within the capital. President Hsu recognized the control of Wu and on the following day he issued deposition orders against Chang as Inspector-General of Manchuria. Wu made no attempt to enter the capital and intimated that he wished the President to remain in office at least temporarily. Wu also gave each prisoner of war a sum of money for his expenses home. Wu retained his organization intact, fearing the possibility of an attack by Sun Yat-sen from the south. The latter had remained very inactive during the struggle. General Wu continued at this headquarters at Paoting-fu, evolving plans for the unification of the whole country. His problem was complicated by the nature of the resistance offered by General Chang who appeared unwilling to accept defeat. The latter was furious at the presidential decree of 6 March, dismissing him from his post as Inspector-General of the three Manchurian provinces and issued a declaration of independence on 13 May repudiating all allegiance to the President and setting up an independent government of his own. He proclaimed his readiness to enter into treaty engagements with the powers and to protect foreign lives and property. This pronouncement perturbed the Peking Government and caused some uneasiness to the foreign legations. Chang next seized the postoffice receipts and the customs, salt and other revenues at Mukden and deposited them in his own treasury as an earnest of his intention to set up a government of his own. On 21 May the Peking Government denounced Chang as a rebel and traitor. General Wu persisted in his determination to

drive Chang out of China and at the same time pursued his plans for pacification. To the latter end he forced the resignation of President Hsu on 2 June. General Wu next brought pressure to bear on the President of the South, Sun Yat-sen, in order to force his resignation also and in this way pave the way for a unification of the country. Between Dr. Sun and General Chen Chiung-ming, the Canton Military Governor, there had arisen a quarrel which paralyzed the activity of the former. Toward the end of May, Sun's position was rendered serious by the fact that the troops of General Chen were between him and Canton and the latter had demanded Sun's resignation. A partial reconciliation was announced on 3 June and at the same time it was stated that Sun Yat-sen had re-entered Canton. The Pekin Cabinet now invited Li Yuan-hung, former President of China, to take over the presidency and the latter signified his willingness on condition that Dr. Sun resign his office as head of the southern rival government. Sun refused to step aside, contending that the Canton government was the legal government of China. His personal influence was sufficient to hold in Canton many of the members of the old Parliament and to induce these men to continue their support of him. Li Yuan-hung arrived in Pekin on 10 June and assumed the presidency. In a proclamation issued the same day he said that his decision had been influenced by pledges of support from Chang-Tso-lin, from a large group of the Canton Parliament and from Gen. Chen Chiung-ming. The first act of the new President was to appoint Dr. Wu Ting-fang to the office of Premier. The new alignment of supporters of the President left Dr. Sun in isolation and he had further to meet the stern demand of General Wu that if Sun continued to oppose the unification of the country on a constitutional basis he (Wu) would lead his forces against him and crush him as he had just crushed Chang in the North.

Wu Ting Fang, however, remained faithful to Sun and the appointment was rescinded by the President. Wu Ting Fang died on 23 June, just as Sun Yat-sen was overthrown, together with his government. The Pekin Cabinet was reorganized with Dr. Yen as acting Premier; Tan-Yen Kai as Minister of the Interior; Gen. Wu Pei-fu as Minister of War; Chang Kuokang as Minister of Commerce, and Huang Yeng-Pei as Minister of Education. The other ministers were held over from the former regime. Wu Pei-fu declined to take office and the Vice-Minister took charge provisionally. Gen. Wu Pei-fu continued his campaign against Gen. Chang Tso-lin, winning a battle after a fierce encounter at Shanhaikwan and driving Chang's forces further back in the direction of Manchuria. Chang sued for an armistice which was arranged for 16 June. On the same day the three Manchurian provinces proclaimed their independence and made Chang Commander-in-Chief. Hostilities ceased on 20 June with Chang's forces withdrawn into Manchuria in accord with the terms of the armistice. Meanwhile in South China the quarrel of Dr. Sun with Gen. Chen Chiung-ming proved fatal to the former and the latter's troops captured

Canton on 17 June. Sun took refuge on one of his war vessels off the coast and bombarded the defenceless city of Canton, killing over 1,000 persons. Dr. Sun Yat-sen strove to regain his power in the South. His forces on 12 July took the Macao forts, two miles from the city down the West River. A sally by him four days later near Shiukwan, 150 miles north of Canton, was stopped by the troops of General Chen, numbering about 14,000 and sent north from Canton along the railway. On 20 July it was reported that Sun's forces had been completely routed and hundreds slain. Toward the end of the month it was seen that Sun was waiting for his northern Kiangsi troops to reach Canton and join up with his southern forces. Chen, however, managed to prevent this junction and finally at the end of July met up with 25,000 Sun troops in a frontal attack at Shiukwan. Sun's troops were defeated after a stiff battle, losing 2,000 rifles, 21 machine guns and 9 cannon to Chen and leaving 3,000 killed or wounded on the field. Sun's army retreated broken and demoralized to Kiangsi Province and Sun fled to Shanghai on 9 August. In the closing days of July agents of General Wu, who had been sent into Manchuria, reported that Gen. Chang Tso-lin was making extensive preparations just outside the Great Wall; had established three defense lines, the first at Shanhaikwan, second at Wanchitun and a third line at Sulching. Chang also was reported as having concluded an alliance with Tuan Chi-jui, the former leader of the pro-Japanese Anfu Party, ousted from Pekin the year before. Chang having consolidated his forces and made himself virtual dictator of Manchuria, issued a formal declaration of independence on 1 August, notifying all foreign consuls in Pekin that all questions concerning Manchuria must be referred to him, and refusing to recognize all agreements made with the Pekin Government. At this juncture Japan demanded of the Pekin Government that it put a stop to the incursions of bandits across the Manchurian-Korean frontier. On 1 August the Parliament met at Pekin for the first session in five years. The drafting of a permanent constitution was on the agenda. Stormy scenes marked the opening session over the attempt of the speaker, Wu Ching-lien, to have the five-year lapse considered as a recess. This was felt as a move to ignore and invalidate the acts of the members of the Southern minority who had met in Canton in 1921. Spasmodic outbreaks in the provinces further harassed the Pekin Government. The situation, already somewhat gloomy, was made worse by the typhoon and tidal wave that swept over Swatow on 2-3 August, causing 50,000 deaths and rendering 100,000 people homeless. The situation was relieved through the program issued the middle of August by Sun Yat-sen, in which he advocated the assembling and functioning of Parliament free from all outside influences, self-government for the provinces, abolition of the system of provincial government by the Tuchuns or military overlords and the turning of the lawless provincial armies into labor battalions. General Wu approved the program on 21 August and soon afterward the President,

Li Yuan-hung, invited Dr. Sun to Peking to aid in the task of reconstruction. Dr. Sun in his reply signified his willingness to co-operate. Civil war, however, was being waged in the Canton region by General Chan and anti-Christian propaganda was said to form part of his plans. In Manchuria, General Chang remained at bay and his massed forces obliged General Wu to keep himself in readiness to repel any attack that might develop from that quarter. The Peking Government was virtually bankrupt as the result of the internal strife and based all its hopes in conciliation with the figure of the former President Sun Yat-sen as the dominant one of the situation. A new Cabinet, headed by Dr. Wang Chung-hui, assumed office on 20 September with Dr. Wellington Koo as Foreign Minister. On 8 October Gen. Hsu Shuh-chen, a leading member of the pro-Japanese Anfu Party, established an independent military government at Yengping, Province of Fukien. National troops were at once dispatched against him and on 12 October he was defeated by these at Shiukow. With the reassembly of the Chinese Parliament on 11 October the members divided into several factions and there was little opportunity of effecting the necessary reorganization of the finances and of passing other measures vitally necessary to the pacification and unification of the country. The chief issue appeared to be the alternative between unification of the country through the establishment of a strong centralized government and a federal system leaving the provinces for the most part autonomous. General Wu opposed emphatically any form of federalism. Foochow was captured in October by the troops of Hsu Tsung-chi and a revolutionary government established. American, British and Japanese naval guards were at once landed for the maintenance of order. Troops under the orders of the Peking authorities were dispatched from the Province of Kwantung to check the southward advance of the rebels from Foochow. With the withdrawal of the Allied troops from Siberia the Government of the United States relinquished its share in the control of the Chinese Eastern Railway. The formal notice of this act was conveyed in a note from the American Secretary of State presented to the Chinese Government on 31 October by Minister Schurman. After protracted negotiations China and Japan on 5 December completed settlement of the Shantung controversy as outlined in the terms of the Washington Treaty. China agreed to pay Japan 40,000,000 yen for the Shantung Railway. The payment to be made in 15-year Chinese treasury notes, bearing interest at 6 per cent. In addition, China pays Japan 16,000,000 yen for all public properties located in the Kiaochow district. The civil and military administration was turned over to China on 10 December, while the Shantung Railway was transferred to Chinese authority on 1 Jan. 1923. China, as a direct result of the Washington Conference, thus regained control of territory which she lost when it was seized by Germany in 1898.

CHINA TRADE ACT, a law approved by the President of the United States 19 Sept. 1922 under which the stock of corporations directly engaged in commerce in China is exempt

from Federal income taxation provided that such stock is held by Chinese or American stockholders, resident in China; and provided, further, that the amount of money so exempted is distributed annually as a special dividend to such stockholders. The act, for the first time, places American trade in China on an equality with that of Great Britain, France and Japan. To obtain the benefits of the act, the concerns must be organized in the District of Columbia for the specific purpose of trading in China. Applications for registration under the law should be addressed to the Assistant Registrar, China Trade Act, Department of Commerce, Washington, D. C.

Applications for Certificate of Incorporation. An application for a certificate of incorporation as a China Trade Company must be signed and sworn to before a notarial officer of the United States, or of any State, by a majority of the incorporators and must set forth the following information: (1) Date of application; (2) place of application; (3) name and address of resident incorporator; (4) whether the application is for an original or extended certificate; (5) names and addresses of incorporators; (6) the reason, if any, for the failure of any incorporator to sign; (7) nationality of each incorporator by name; (8) in case of naturalized citizens, a certificate of naturalization must accompany the application for each incorporator so naturalized; (9) a statement as to the manner and extent the proposed corporation will aid in the development of markets in China for goods produced in the United States; (10) names and nationalities of stockholders with number of shares subscribed to by each; (11) minutes of meeting adopting articles of incorporation; (12) certificate by secretary of meeting regarding adoption of articles of incorporation with certified copy of articles of incorporation signed and acknowledged by incorporators; (13) signatures of incorporators. Copies of the certificate when issued must be filed with the American legation at Peking, and with the Consular officers for the districts in which the company's main and branch offices or agencies in China are situated.

Registration Fees.

Section 17 (B) of the Act provides that the registration fees for China companies shall accompany each application (except that for property value which will be payable before certificate is issued), and shall be as follows:

Certificate of registration (as provided in section 5).....	\$100
Certificate of property value (as provided in section 8).....	300 Maximum 25 Minimum

(Fees based on value of property and investigation necessary in each case)

Certificate of amendment to articles of incorporation or authority for dissolution (as provided in section 10)..... 100

The fees shall be payable in United States gold either in Shanghai, China, or in Washington, D. C., and shall be collected by the registrar or secretary and turned over to any designated disbursing officer of the United States Treasury Department and handled by him in accordance with section 17 of the Act.

Certificate of Property Value. Section 8 provides that the certificate of property value shall contain the following information signed and properly sworn to before a notarial officer of the United States or any state: (1) Date of certificate; (2) name of owner of property; (3) exact description and location of property with list or schedule; (4) cost of property at date of purchase; (5) present liens or mortgages on property; (6) statement of present value supported by statements of two other persons verifying same with reasons for knowledge of value; (7) signatures of three persons under oath.

Certificate of Amendment of Articles of Incorporation or Authorization for Dissolution or Extension. The certificate of amendment of articles of incorporation or authorization for dissolution or extension as provided for in section 10 (C) shall contain the following information signed by a majority of the directors and properly sworn to before a notarial officer of the United States or any State by the secretary of the meeting: (1) Date of certificate; (2) date of meeting authorizing action; (3) total number of stockholders; (4) total number empowered to vote; (5) number of stockholders attending meeting; (6) number of stockholders voting for action; (7) signature of above majority of directors and secretary of the meeting.

Annual Reports. Section 12 (A) provides that the annual report of companies operating under this act shall be for the year ending December 31st and shall consist of the following, subscribed to under oath by the secretary of the corporation: (1) Minutes of the stockholders' meeting approving the balance sheet for such fiscal year; (2) a certified copy of the balance sheet (as per specified form); (3) a detailed statement of profit and loss (as per specified form); (4) a statement of the distribution of profits; (5) changes in list of stockholders during the year.

Inspection of Accounts. Section 12 (B) provides that application for inspection of reports, certificates, certified copies of applications, etc., may be made to the secretary or registrar and, upon approval, the applicant may inspect the papers specified. Such applications shall contain the following: (1) Name of company or companies registered; (2) list or titles of papers desired for inspection; (3) reason for desiring to inspect same; (4) certificate under oath that information will be held strictly confidential and not for publication or dissemination; (5) signature of applicant and name of company (if any) which he represents.

Appeals from Decision of Registrar. The Act provides for strict supervision over the activities of companies operating under it and the regulations carry out these provisions by laying down definite rules of procedure regarding appeals from the decision of the registrar to the Secretary of Commerce, as follows:

Appeal from Decision of Registrar. Section 3. (1) Appeal from any decision of the registrar may be made direct to the Secretary of Commerce, but only after due notice of the appeal has been filed with the registrar by the person appealing. No action shall be taken by the registrar pending the secretary's decision. (2) A transcript of the record in each particular case of any controverted question, together with a copy of the registrar's decision must accompany the appeal, with a certificate signed by the registrar that such transcript and decision are correct copies. (3) In case of any dispute on the above, resulting in the failure of the registrar to sign such certificate, he shall submit his reasons in full with supporting documents to the secretary. The person making the appeal may do likewise, provided his statement is submitted under oath. (4) The decision of the secretary will be communicated in writing independently to both the registrar and the person appealing as soon as practicable.

In view of the approval of the above-mentioned act the following tabulation of foreign firms and persons doing business in China is of especial interest. It was compiled by the United States Department of Commerce from what it asserts are "supposedly reliable" sources in Shanghai:

	1914		1920		1921	
	Firms	Persons	Firms	Persons	Firms	Persons
American...	136	4,365	409	7,260	412	8,230
British.....	534	8,914	679	11,082	703	9,298
French.....	113	1,864	180	2,753	222	2,453
German.....	273	3,013	2	1,335	92	1,255
Japanese....	955	84,948	4,278	153,918	6,141	144,434
Russian.....	1,237	56,319	1,596	144,413	1,613	68,250
Non-treaty powers...	5	95	11	132	14	193
All others....	168	5,289	223	5,176	314	6,656
Total...	3,421	164,807	7,375	326,069	9,511	240,769

CHINESE TREATIES. See WASHINGTON CONFERENCE.

CHIROPRACTORS. According to Dr. B. J. Palmer, president of the Palmer School of Chiropractic, Davenport, Iowa, there were between 13,000 and 15,000 chiropractors in the United States in 1922 and one or more in each of 19 foreign countries. The number of students enrolled in the various chiropractic schools is over 8,000 annually, asserts Dr. Palmer. Chiropractors have been licensed in several States and a number of States have chiropractic

laws and examining boards. Among the latter are Arizona, Connecticut, Florida, Georgia, Idaho, Maryland, Minnesota, Montana, Nebraska, New Hampshire, North Dakota, North Carolina, Kansas, Oklahoma, Oregon, Iowa, South Dakota, New York, Arkansas, Vermont, Washington and New Mexico. There are several competent schools of chiropractic. The Palmer School is the oldest and largest. Other modern schools listed by Dr. Palmer are the Missouri Chiropractic College, the Canadian Chiropractic College, the Eastern College of Chiropractic and the Texas Chiropractic College. Consult the article 'Chiropractic in the Encyclopedia Americana, also: Firth, J. N., 'Chiropractic Symptomatology,' Palmer, B. J., 'The Science of Chiropractic' (Vols. I, II, III, IV, V, VI). 'Technique of Chiropractic,' Palmer, M. H., 'Anatomy,' Vedder, H. E., 'Physiology,' 'Gynecology,' Burich, S. J., 'Chemistry,' Craven, J. H., 'Orthopedy,' Thompson, E. A., 'Chiropractic Spiniography,' Loban, Joy M., 'Technique and Practice of Chiropractic.'

CHOCOLATE. See FOOD STANDARDS, FEDERAL.

CHOLERA. See MEDICINE AND SURGERY, ADVANCEMENT OF.

CHOLMELEY-JONES, R(ichard) G(ilder), formerly director of the United States Bureau of War Risk Insurance: b. New York City, 8 Oct. 1884; d. there, 21 Feb. 1922. He was educated in the public schools of his native city, under private tutors, and at the Wharton School of Finance and Commerce of the University of Pennsylvania. From 1899 to 1903 he was in the insurance business; from 1903 to 1917 he was in the employ of the Review of Reviews Company, the last seven years as advertising manager. Following the entrance of the United States into the World War, he reorganized the work of the recruiting committee of New York City under the Mayor's Committee of National Defense in September 1917 and thereafter, at the request of the Secretary of War, organized the sale of the second Liberty Loan bonds throughout the United States army, bonds to the amount of \$86,000,000 being disposed of. After being twice rejected for military service, the government, recognizing his ability as an organizer, in November 1917 commissioned him captain in the Adjutant-General's department and sent him to France to assist in organizing the War Risk Section of the American Expeditionary Forces of which he soon was made chief. Subsequently he was promoted to lieutenant-colonel and on 5 Feb. 1919 he was honorably discharged. Upon his return to America, he was called to Washington by the Secretary of the Treasury and on 19 May 1919 he was made director of the Bureau of War Risk Insurance. He held the position for almost two years and then resigned to become vice-president of the Finance and Trading Corporation of New York City with which he was still connected at the time of his death. He was author of the article WAR RISK INSURANCE in the Encyclopedia Americana.

CHORUS EQUITY ASSOCIATION. See ACTORS' EQUITY ASSOCIATION.

CHOSEN. See KOREA.

CHRISTIAN CHURCH. The year 1922 being the year of the Quadrennial Convention of the Christian Church, several changes were effected in the interest of denominational cohesion and effectiveness. The general corporate body hitherto known as the American Christian Convention was changed at this Quadrennial Convention, held in Burlington, N. C., in October, to the General Convention of the Christian Church. The Christian Publishing Association was also merged into this body, retaining its former name and function only for the sake of corporate convenience. The Boards of Education, Sunday School and Christian Endeavor were merged into one board known as the Board of Christian Education which will administer jointly the interests formerly cared for by the three separate departments. The Women's Board for Home Missions and Women's Board for Foreign Missions were also merged into a single organization. The various boards of the Convention were constituted a General Board of the Christian Church with regular annual meetings.

During 1922 a new college was founded at Wadley, Ala., known as Bethlehem College. Another orphanage located at Carversville, Pa. was added to the list. A new periodical *The Journal of Christian Education* was launched. A Department of Evangelism was organized with a secretary, executive secretary and field workers. A special effort for the increase of funds for ministerial relief and sustentation was inaugurated. This will include an enlargement of the plant and added equipment to the aged ministers' home.

The Home Mission work was strengthened by the addition of a number of field secretaries covering the territory of the Church in the United States and Canada. A program of centralization in both city and country efforts was inaugurated by the Home Mission Board. Every department of the church showed an increased income for the year, the Forward Movement collections having reached 92 per cent of the total amount due on pledges. The Foreign Mission Board is undertaking a new field in China and will probably enlarge the scope and character of its work in Latin-American territory. The Forward Movement having completed its campaign, in operation since January, 1918, reduced its efforts by merging the activities which it created with the general and established agencies of the Church. It will continue its organic existence through 1924 in order to collect maturing pledges and otherwise supervise the interests which it has had in charge. The Commission on Christian Unity during the year made overtures to all evangelical denominations to unite. This effort has met with certain favorable responses and negotiations are being encouraged for organic union with bodies of similar faith and polity.

The Church has inaugurated a financial campaign for various phases of educational work in its colleges, the fund raised to be \$1,425,000. A system of summer schools for religious workers has been worked out and put in operation, much of it having been completed during 1922. By this plan ministers and laymen will be gathered together at various centers for specific instruction during the summer months.

The statistics of the Church as compiled for 1922 are as follows: Church members, 102,042; Church organizations, 1,208; Ministers, 942; Sunday-Schools, 1,159; Sunday-School Pupils, 94,099; Members Christian Endeavor Society, 7,032.

The periodical publications of the Church include: *The Herald of Gospel Liberty*—Dayton, Ohio, *The Christian Sun*—Richmond, Va., *The Christian Missionary*—Dayton, Ohio, *The Christian Vanguard*—Drayton, Canada, *The Journal of Christian Education*—Dayton, Ohio, and six Sunday-School and five educational publications of smaller circulation. Periodicals are also issued by the Afro-Christian Convention for circulation among the colored constituency.

F. G. COFFIN,
President.

CHRISTMAS ISLAND, an island annexed to the British colony of the Gilbert and Ellice Islands in November 1919, situated 200 miles to the southwest of Java. It has an area of 42 square miles and a population of 2,293. Phosphate of lime is the chief product of the island and most of the inhabitants are employed in the phosphate workings. The exports of this commodity in 1921 amounted to 56,700 tons.

CHURCH OF THE NEW JERUSALEM, a body of Christians founded on the writings of Emanuel Swedenborg and often called "Swedenborgians." The Church is represented in the United States by 90 ordained ministers and 6,586 communicants. It maintains three educational institutions and has 96 church edifices in the United States and Canada. The Church supports active and growing missions in Japan, the Philippines and in several places on the Continent of Europe.

CHURCH PEACE UNION. See PEACE AND ARBITRATION, INTERNATIONAL.

CHURCHES IN THE UNITED STATES, Statistics of the. The very serious effects of the war on the churches in other countries than the United States and Canada prevent at present a general survey of religious statistics by communions represented in various parts of the world. We must wait until more settled conditions in Europe permit complete reorganization of religious bodies separated from the state. New churches are apparently being formed in Czechoslovakia and other principalities to which the results of the war gave the right of self-determination, and definite statistical returns are not yet available.

In the United States the body of churches went down almost to defeat in the year 1919, and many of the leading denominations reported actual decreases in members. The aggregate gain for the whole list was the smallest perhaps ever reported—56,301. This was somewhat more than one-third of the net gain of the previous year, 154,320. The Methodist Episcopal Church, the largest Protestant body, had a net loss in 1919, in the United States alone, of nearly 70,000 members; the Northern Baptist Convention of 35,000 and the Presbyterian Church (Northern) of more than 32,000. One reason for these heavy losses was an extraordi-

nary increase in the number of deaths, in part of soldier members. Those reported by the Methodist Episcopal Church, leaped from 35,629 in 1918 to 71,677 in 1919. Other causes were due to the fact that many churches were pastorless and regular church work was greatly reduced.

The general resumption of church activities told a different story in 1920, when the gains rose to 814,000, a fourteen fold increase. Those for 1921 were still larger, aggregating over 1,000,000, in which nearly all the denominations shared. The total net gain in the 10 years ending with 1920 was 7,006,787 which, on a basis of 35,245,296 in 1910, indicates a percentage of slightly less than 20, to be exact, 19.88 or somewhat under 2 per cent a year. The gain in the first six years of the decade, down to and including 1916, before the United States entered the war, was 4,642,515, or 13.17 per cent, or 2.19 a year.

By groups the distribution of the aggregate of 44,663,684 communicants, or members, in 1922, is as follows:

Adventists	5 bodies	139,277
Baptists	14 "	8,303,824
Catholic, Roman	3 "	*15,568,099
Catholic, Eastern Orthodox	9 "	625,944
Disciples of Christ	2 "	1,552,713
Congregationalists	1 "	848,318
Jewish congregations	1 "	1357,135
Friends	4 "	118,083
Latter-Day Saints	2 "	587,570
Lutherans	18 "	2,443,016
Mennonites	12 "	85,032
Methodists	15 "	8,270,704
Moravians	2 "	25,254
Presbyterians	9 "	2,401,267
Protestant Episcopal	2 "	1,129,613
Reformed	3 "	522,161
United Brethren	2 "	385,861
Other bodies:		
Evangelical Synod (formerly German)		290,782
Evangelical Church (Methodistic)		217,189
Christian Church		94,153
Unitarians		71,110
Universalists		59,650
Salvation Army		52,291
Pentecostal bodies		64,221
Dunkards, 4 bodies of German Baptists,		142,485
(Plymouth) Brethren, (River) Brethren,		
Churches of the New Jerusalem, Catho-		
lic Apostolic, Scandinavian Evangelical,		
3 bodies, Spiritualists, etc., etc.		

* Not "population," but estimated communicants.

† Embracing only heads of families.

All religious bodies have an aggregate of 238,568 churches, and 202,455 ministers. The increase of the latter in 1922 was 4,012 of the former, 2,445. The above statistics are confined to the territory of the United States alone, omitting millions of members in missionary and other lands.

The largest single denominations having half a million or more members are:

1. Roman Catholic	15,568,099
2. Methodist Episcopal	4,085,016
3. National Baptist Convention	3,426,506
4. Southern Baptist Convention	3,339,188
5. Methodist Episcopal Church, South	2,362,598
6. Presbyterian (Northern)	1,720,538
7. Northern Baptist Convention	1,281,764
8. Disciples of Christ	1,234,776
9. Protestant Episcopal	1,118,396
10. Congregational	848,318
11. Lutheran Synodical Conference	769,296
12. United Lutheran	784,925
13. African Methodist Episcopal	651,760

Those having less than 500,000 members and 250,000 or more are:

Latter Day Saints (Mormons)	492,205
African Methodist Episcopal Zion	490,280
Presbyterian (Southern)	411,825
United Brethren	366,060
Jewish	357,135
Colored Methodist Episcopal	351,404
Reformed in United States	334,526
Churches of Christ (Disciples)	317,937
Evangelical Synod	290,782
Norwegian Lutheran	284,690

One hundred and fourteen of the denominations, more than one half of the whole number, have less than 50,000 members, ranging from 145 up to 49,184.

H. K. CARROLL,

Author of "The Religious Forces of the United States."

CHURCHES IN THE WORLD WAR.

The churches of the United States in the period of the European War, with patriotism not exceeded by any other organizations, co-operated enthusiastically with the government in its vast measures of preparation and prosecution, supporting unitedly the appeals for the great popular loans on bond issues; the campaigns of the Red Cross for funds for its helpful work; and of the Young Men's Christian Association, the Knights of Columbus, the Salvation Army and similar organizations. Many ministers left their churches and went to the scene of conflict as chaplains, as welfare-workers, and as helpers in other capacities in camp, in field, hospital, etc. After the armistice it was found that the war activities had absorbed so much of the time and strength of the ministry that regular church work had been greatly reduced. The outcome appeared in the very small net gain of members of the various denominations in the year 1919, the culminating year of the war. Many of the larger denominations reported actual decreases and but few had more than enough accessions to make good the losses by death and other causes. These losses were naturally heavier than usual. The international conflict, however, brought the various religious bodies — Protestant, Catholic, Jewish in closer sympathy than ever before, and for the first time in history the distances between diverse faiths were so bridged that co-operation in a public appeal for funds for war-relief work became an established fact, and Christians and Jews worked like brothers side by side. For the moment their differences were in abeyance, following the example of the nations of the Entente, who pooled their resources that they might roll back the common foe.

The losses sustained by the churches of Great Britain and her colonies, and by those of the participating countries of Europe were, of course, exceedingly heavy. The awful carnage of millions upon millions, decimated religious populations in Belgium, France, Italy, Germany, Austria, Hungary, Russia and other countries, and left the churches prostrate. The recovery will necessarily be a gradual one. In Russia, a government apparently unfriendly to religion has complicated the situation; but in the Orthodox Church, freed from the rigid control of the former imperial régime, an attempt to popularize

the Orthodox faith is being made and a conference has been called to promote what may be called a reform movement, particularly for the benefit of the peasantry whose religious instincts are deep and strong. Representatives of other churches have been asked to attend the conference at Moscow in an advisory capacity.

Cessation of Divisive Influences.—Religious controversy between denominations in the United States, which was quite intense in the last century, has after a period of gradual cessation, almost entirely disappeared. Fierce dispute between Catholics and Protestants, between various Protestant bodies over particular doctrines and practices, as between Arminianism and Calvinism, as to the proper mode and subjects of baptism, etc., have gone into history and by common consent, ceased generally to be topics of sermons and addresses. The tendency, on the contrary, is strong toward co-operative effort for common purposes, as for example, in the Federal Council of the Churches of Christ in America, in which most of the leading Evangelical churches are associated.

Failure of the Inter-Church World Movement.—A movement in which Baptist, Congregational, Methodist, Presbyterian and Reformed and other bodies were associated, known as the Inter-Church World Movement was formed a few years ago with the objective of a united appeal for funds for missionary, educational and other like purposes. It was to be a united "drive" for hundreds of millions of dollars, like those which appealed to the nation for war objects. The Methodist Episcopal Church had set as a goal for the centenary of the organization of its missionary society in 1919, the raising of a hundred millions, or more, in five annual payments, for its missions, home and foreign, and this daring project suggested the formation of the Inter-Church World Movement. Preparations for the joint appeal for the largest sum ever before asked for religious purposes were begun on a large scale; but the enterprise failed disastrously in its financial appeal, saddling the various denominations which had given guaranties for its expense with some millions of dollars of deficit.

Separate denominational campaigns, however, were successfully carried forward resulting in an immense advance in missionary enterprise, home and foreign, the increase of endowments of denominational schools and colleges and the strengthening financially of the general work of the Churches.

A Federal Union of Churches.—While the leading Evangelical Churches were still under the intimate fraternal feeling which the co-operative efforts of the war had deepened and strengthened, the General Assembly of the Presbyterian Church (Northern) proposed a Conference to inaugurate a movement for the bringing of the Churches together in a compact which might lead to the complete merging of many of them. An *ad interim* committee was the outcome of a conference held at Presbyterian headquarters in Philadelphia which worked out a plan of union on the basis of the Ecumenical Creeds and modeled as to its ecclesiastical construction on the federal system of the United States government. Each denomination was to

retain its name, its creed, its system of government, its usages, its peculiar methods of work, yielding gradually the supervision of its benevolent societies to a General Council of the uniting bodies, to be held biennially. Union of local churches was to be encouraged and promoted to prevent rivalry and costly competition. The plan was intended to avoid the many almost insurmountable obstacles which would be raised by an attempt to formulate an ecclesiastical system out of the many varieties now in use, or a confession for the united body. The Reformed Church in the United States (formerly German) took the necessary constitutional steps in its general and subordinate judicatories; but the Presbyterian Church, which fathered the attempt, failed to give its consent to the requisite changes in its constitution, and the easiest plan thus far devised for Christian unity awaits possible resurrection when the demand for interdenominational merging becomes more insistent.

World Conference of Faith and Order.—The General Convention of the Protestant Episcopal Church in 1910 proposed to the Christian world a reunion on the basis of Faith and Order, setting forth as a starting point for discussion what has long been known as the quadrilateral proposition of the Lambeth Conference of the Anglican Communion. Many of the Evangelical Churches entertained the invitation to join in the movement and appointed representatives to meet committees to arrange preliminaries. The outbreak of the European War interrupted conferences and correspondence; but negotiations went forward after the armistice in 1918 and a preliminary conference was held at Geneva, Switzerland, in 1920, and a date has been fixed for the proposed Conference, which is to be held in Washington, D. C., in May 1925. A Continuation Committee was appointed on which representatives of national churches of the following communions are serving: Anglican, Baptist, Congregational, Czechoslovak, Disciples, Eastern Orthodox, Friends, German Evangelical, Lutheran, Methodist, Moravian, Old Catholic, Presbyterian, Reformed and South India United. Full discussions of points at issue, held in Lambeth Palace, by a committee of 13 representing the Church of England and the Free Churches of England have resulted in an agreement for consideration of 10 points as to the nature of the Church, and of 10 points on its ministry, and 8 points as to the place of a creed in the Church. Another Lambeth Conference of Bishops has put the famous Quadrilateral in a more irenic form. The Roman Catholic Church has declined to take part in the Conference.

The Movement Toward Denominational Reunion.—The actual gains, since the war, of the movement for reunion have been considerable. Three leading general bodies of Lutherans, which had been separate for many years, were successfully merged in the United Lutheran Church in America, in October 1919, in the city of New York. These were the General Synod, the oldest, the General Council, representing a stricter confessional type, and the United Synod, South. The consolidation was accomplished without a jar and without

showing since any lines of cleavage. District synods, many of which overlapped, were merged and so were the missionary and other benevolent societies, the publishing and other denominational interests, and the staffs of officials. Three meetings of the General Council of the United body have been held, and no friction has yet appeared. The gain in efficiency, economy and power and influence has been immense.

Three considerable Norwegian Lutheran bodies were also merged, about the same time, thus reducing the number of separate Lutheran organizations by four.

Two other denominations have disappeared by consolidation—the Welsh Presbyterian Church, which has united with the Presbyterian Church (Northern) and the Free Baptist Church, which has been merged with the Northern Baptist Convention. The latter is significant of the subsidence of a former doctrinal controversy among Baptists over Calvinism. The former held to the Arminian view of free will, the latter to the Calvinistic.

In October 1922, two kindred Methodist bodies known as the Evangelical Association and the United Evangelical Church, which divided thirty-one years ago, were merged at a meeting in Detroit, Michigan, making a single body of well on to 250,000 members.

Besides these gains for unity, economy and efficiency, there are pending negotiations for union between certain bodies of Presbyterians, between the United Brethren in Christ, a Methodist body, and the Methodist Episcopal Church, South. Also between the last named and the Methodist Episcopal Church, which were separated in 1844-46 by the slavery question. The reunion of the last two denominations may be delayed a few years, but it seems quite sure to come in the not distant future. It would constitute a body of more than six and a half million communicants.

H. K. CARROLL,

Author of "The Religious Forces of the United States."

CHURCHES OF CHRIST IN AMERICA, Federal Council of the. An interdenominational body constituted by the official action of the Protestant denominations in the United States. It had, at the close of the year 1922, 29 constituent bodies. This is one fewer than in the previous year, due to the merger of the Evangelical Association and the United Evangelical Church, which during 1922 have become a single body known as the Evangelical Church (q.v.). The bodies which constitute the Council are as follows: Baptist (churches, North, National Baptist Convention, Free Baptist Churches, Christian Church, Christian Reformed Church in North America, Churches of God in North America (General Eldership), Congregational Churches, Disciples of Christ, Friends, Evangelical Church, Evangelical Synod of North America, Methodist Episcopal Church, Methodist Episcopal Church, South, African Methodist Episcopal Church, African Methodist Episcopal Zion Church, Colored Methodist Episcopal Church in America, Methodist Protestant Church, Moravian Church, Presbyterian Church in the United States of America, Presbyterian Church in the United States

(South), Primitive Methodist Church, Protestant Episcopal Commission on Christian Unity and Department of Christian Social Service, Reformed Church in America, Reformed Church in the United States, Reformed Episcopal Church, Reformed Presbyterian Church, General Synod, Seventh Day Baptist Churches, United Brethren Church, United Presbyterian Church, United Lutheran Church (Consultative Body).

Of these denominations all are full and official members by the action of their highest judicatories, with the exception of the United Lutheran Church, whose relationship is consultative, and the Protestant Episcopal Church whose connection with the Council is through its Commission on Christian Unity and Department of Christian Social Service. The total number of local churches included in the constituency of the Federal Council is 143,283; the number of clergymen is 113,823. The total communicant membership embraced within the Council is 20,042,695.

The Council as a whole consists of 400 members designated by the several denominations to act for them in co-operation with the other churches. The Council, which meets quadrennially, has an executive committee of approximately 100 persons meeting annually, and comprised also of official representatives of each of the constituent bodies. The last meeting of the executive committee was held in Indianapolis 13-15 Dec. 1922. An administrative committee, including one official representative from each of the denominations, meets monthly in New York.

The officers of the Council (1923) are: President, Dr. Robert E. Speer, New York; Chairman of the Executive Committee, Rev. F. W. Burnham, St. Louis; First Vice-Chairman, Rev. Rufus W. Miller, Philadelphia; Second Vice-President, Prof. John R. Hawkins, Washington; Chairman of the Administrative Committee, Rev. John M. Moore, Brooklyn; Recording Secretary, Rev. Rivington D. Lord, Brooklyn; General Secretaries, Rev. Charles S. Macfarland, Rev. Samuel McCrea Cavert, 105 E. 22d street, New York City.

In addition to the general task of developing and expressing the spirit of co-operation and unity among the Protestant Churches, the specialized work of the Council is carried on by a group of commissions, all under the oversight of the Council itself. The more important of these commissions, together with their officers, are:

The Commission on Evangelism (Chairman, Rev. J. Ross Stevenson, Princeton, N. J.; Secretary, Rev. Charles L. Goodell), is developing a united approach to the Evangelistic work of the churches. It gives special attention to promoting simultaneous Evangelistic movements in the larger communities on the part of the pastors themselves.

The Commission on the Church and Social Service (Acting Chairman Shelby M. Harrison, of New York; Secretaries, Rev. Worth M. Tippy and Rev. F. Ernest Johnson), is the centre through which the churches deal unitedly with social issues. Particular attention is given to the developing of better relations in industry

through conferences between employers and employees and ministers, and through a Research Department which issues a weekly information service interpreting contemporary social questions from the standpoint of Christianity.

The Commission on the Church and Race Relations (Chairman, John J. Eagan of Atlanta; Secretaries, Dr. George E. Haynes and Rev. W. W. Alexander), is helping the churches to become more effective centres in promoting co-operation and good-will between the white and Negro races in this country. It has assisted in developing inter-racial committees in several communities, and is beginning a campaign to arouse public opinion against the lynching evil.

The Commission on International Justice and Good-will (Chairman, Dr. John H. Finley, of New York; Vice-Chairman, Bishop Charles H. Brent, of Buffalo; Secretary, Rev. Sidney L. Gulick, of New York), endeavors to mobilize the Christian forces of the country to outlaw war by building up effective international agencies for co-operation in common tasks and the maintenance of peace. During the past year, attention has been directed especially to an educational campaign through the churches for reduction of armaments, and for the entrance of the United States into effective co-operation with the other nations of the world. Special committees are giving attention also to developing better relations with the Orient and with Mexico. National relief both for Russia and the Near East has been the subject of unusual efforts, and the Council had a representative in Russia during part of the year distributing relief.

The Commission on Councils of Churches (Chairman, Fred B. Smith, of New York, Secretary, Rev. Roy B. Guild), is organizing the churches of local communities for co-operative action in their own areas. From the local councils and federations of churches thus established, the Federal Council has points of contact with the country as a whole.

Other commissions deal with Christian education (Chairman, Rev. William Adams Brown), Relations with Religious Bodies in Europe (Bishop James Cannon, Jr., Chairman), Relations with France and Belgium (William Sloane Coffin, Chairman), Temperance (Hon. Carl E. Milliken, Chairman).

In addition to the national office at 105 E. 22d street, New York City, there is a Washington office with Bishop William F. McDowell as Chairman, and Rev. E. O. Watson as Secretary. There is also a Western office in Chicago, with Dean Shailer Mathews as Chairman and Rev. Herbert L. Willett as Secretary.

SAMUEL McCREA CAVERT,
General Secretary.

CIGARETTES. See TOBACCO.

CINCINNATI, University of, a non-sectarian co-educational institution founded in 1870 and located at Cincinnati, Ohio. In 1922-23 it had a faculty of 361 members, 4,298 students, property valued at \$2,597,282 and an income of \$1,030,828.69. Frederick C. Hicks, Ph.D., is president.

CITADEL, The, a State military college founded in 1842 and located at Charleston, S. C.

In 1922-23 it had a faculty of 22 members, 317 students, property valued at \$2,105,948.43, an income of \$391,869.33 and \$182,603.53 for new buildings. Col. O. J. Bond, A.M., is superintendent.

CITIZENSHIP. Under an act of Congress, approved 22 Sept. 1922, it is declared "that a woman citizen of the United States shall not cease to be a citizen by reason of her marriage after the passage of said act, unless she makes a formal renunciation of her citizenship before a court having jurisdiction over naturalization of aliens, and any woman citizen who marries an alien ineligible to citizenship shall cease to be a citizen of the United States." Two classes of women are referred to specifically in the new law which specifies what each class must do in order to acquire American citizenship: 1. An alien woman marrying an American citizen, after the passage of the law, or any woman whose husband is naturalized after the passage of the law, may become naturalized by filing the usual petition for naturalization and complying with all the requirements of the naturalization laws, except that (a) no declaration of intention is required; (b) only one year's continuous residence in the United States, Hawaii, Alaska, or Porto Rico, immediately preceding the filing of her petition, is required. 2. A woman, who, before the passage of the act, was an American citizen and lost her citizenship by marriage to an alien, may become naturalized by filing the usual petition, except that (a) no declaration of intention is required (b) only one year's continuous residence in the United States, Hawaii, Alaska, or Porto Rico, immediately preceding the filing of her petition, is required; (c) no certificate of arrival is required if, during the continuance of the marital status, she shall have resided within the United States. In other words, the effect of the law is to establish separate citizenship for husband and wife. The law raises many complicated questions, for example: Under British law a woman automatically loses her citizenship if she marries an alien. Therefore, an English woman who marries an American becomes, according to British law, an American citizen. But, also, under this same law, an American woman who marries an Englishman becomes automatically a British subject. Under the new American statute, which became a law on 22 Sept. 1922, this woman retains her American citizenship. She finds herself, therefore, a citizen of two countries. To rid herself of her American citizenship she must go to the proper authorities in the country of her alien husband. According to American law, her marriage no longer takes the place of a naturalization paper any more than does the marriage of an alien to an American now automatically make her an American citizen. She must hereafter declare her wish to become a citizen of the United States. If she does not do this, she runs the risk of being a woman without a country.

CITRUS CANCKER. See PLANT INDUSTRY, BUREAU OF.

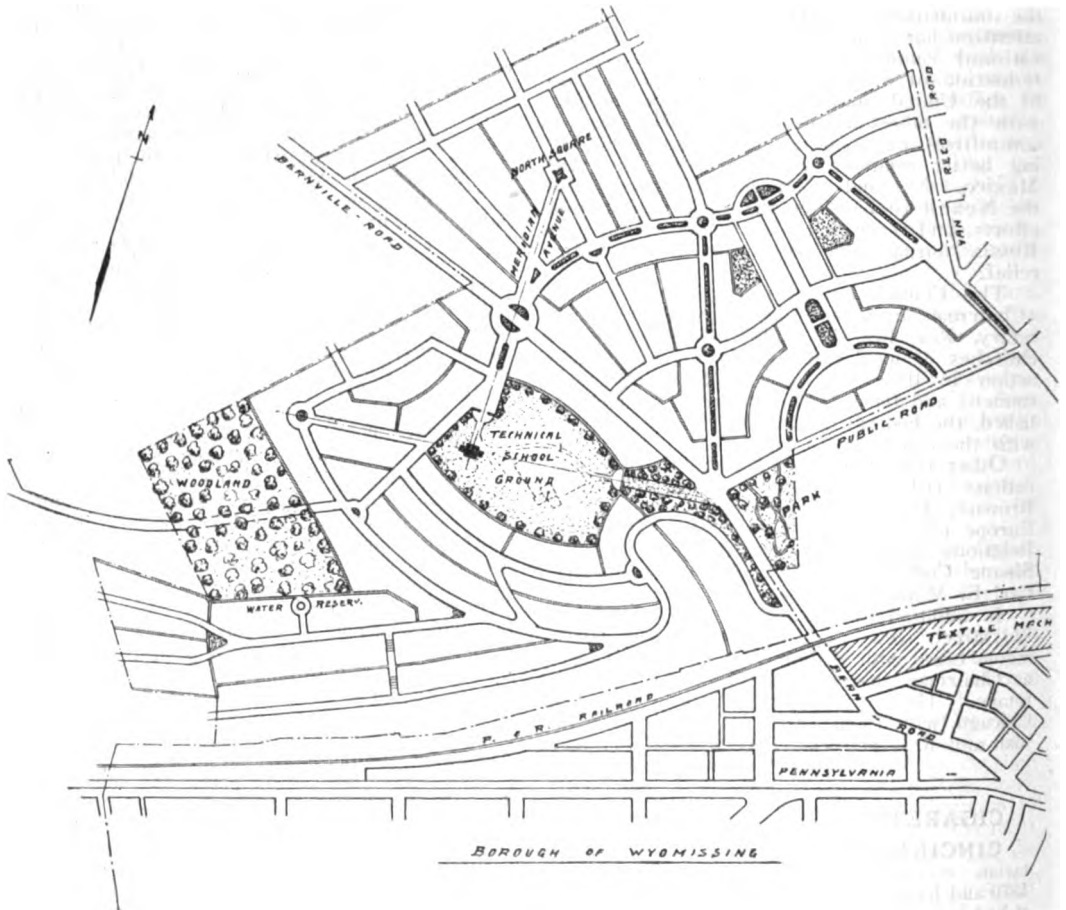
CITY PLANNING AND ZONING. Great progress has been made in the last decade in city replanning, town planning and zoning.

Most of the municipalities, which have been active in these lines, preferred zoning without city planning because these municipalities realized the great economical benefit derived from zoning. They have not as yet realized that, while zoning is but a part of the broad field of city planning, city planning may be carried out successfully without zoning, while zoning without city planning will produce many disadvantages. The originators of the art of city planning and zoning, considered zoning, like recreation grounds, a necessary part of city planning, and these pioneers never suggested the adoption of zoning without devising a comprehensive city planning program.

Many municipalities are now engaged in replanning, notably Philadelphia, Chicago, San Francisco and Seattle. However, a far greater number pay more attention to the development of suburban housing facilities for industrial workers; but unlike the European practice, these undertakings are mostly private enterprises.

005 families, or an average of 214 families per site.

However, with the termination of the war the work of practically all governmental housing undertakings stopped leaving these developments incomplete. Due to the great turn-over of labor (four times per year) manufacturing concerns realized the great benefit they would derive by providing proper homes for their employees and a large number of such concerns are active in the erection of houses for their employees and some have developments under way for 1,000 and more houses. Many of the developments are planned on the garden city program. Among these private housing developments is "Wyomissing Park" in Pennsylvania, a tract of some 500 acres, designed to house the employees of three great industrial establishments. It was started in 1916, and the results have proved so satisfactory that an additional separate tract of some 225 acres for about 1,200 houses, is now being developed.



These housing developments received a great boost during the war, with the formation of the United States Housing Corporation. Not less than 97 sites for housing developments were started by the government to accommodate 21,-

Other great American private housing developments are Roland Park in Baltimore, the County Club district in Kansas City, Saint Francis and Lake Shore Highlands, in San Francisco, and Washington Highlands in Mil-

waukee, all of which rival Europe's best municipal developments and its famous garden cities, be they publicly or privately controlled.

The greatest town planning development, now being devised, is the Palos Verdes project, covering 16,000 acres, including 14 miles of ocean shore, at the southwest corner of the Los Angeles metropolitan area. The total cost is estimated at \$35,000,000.

While private initiative and capital are solving a good part of the city planning and housing of some cities' problems, a very large number of American municipalities have adopted zoning systems, a branch of city planning. The practice of zoning as devised and introduced abroad and adopted in the United States by various municipalities is an interesting subject.

Some American municipalities have home-rule power and therefore did not need specific authority from the State legislatures to adopt zoning systems. Others have had to seek legislative permission. However in the following States zoning applying to all cities is authorized: California, Illinois, New Jersey, New York, Ohio, Oregon, Virginia and Wisconsin. In Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Pennsylvania, and Texas, zoning does not apply to all classes of cities; in Pennsylvania for instance, it applies to the first class city (Philadelphia) and the second class cities (Pittsburgh and Scranton), while it does not apply to the third class cities, of which there are some 35, ranging in population of from 10,000 to 100,000. However, these third class cities are covered by the State City Planning Act and these cities are now engaged in city planning. In Connecticut, the District of Columbia, South Carolina and Tennessee, zoning acts apply only to particular cities. North Carolina, recently passed a city planning act granting zoning power to city plan commissions.

What is Zoning?—In the publication 'A Zoning Primer' issued by the Department of Commerce of the United States, the question is answered as follows: "Zoning is the application of common sense and fairness to the public regulations governing the use of private real estate. It is a painstaking, honest effort to provide each district or neighborhood, as nearly as practicable, with just such protection and just such liberty as are sensible in that particular district. It avoids the error of trying to apply exactly the same building regulations to every part of the city or town regardless of whether it is a suburban residence section, or a factory district, or a business and financial centre. It fosters civic spirit by creating confidence in the justice and stability of the protection afforded. Zoning gives every one who lives or does business in a community a chance for the reasonable enjoyment of his rights. At the same time it protects him from unreasonable injury by neighbors who would seek private gain at his expense. Zoning regulations differ in different districts according to the determined uses of the land for residence, business, or manufacturing, and according to the advisable heights and ground areas. But these differing regulations are the same for all districts of the same type. They treat all men alike."

The reasons for zoning and the benefits to be derived therefrom may be enumerated as

follows: (1) To protect and stabilize property values and investments. (2) To safeguard existing and future building investment values and to encourage building development. (3) To establish districts for homes and prevent the erection in such districts of undesirable buildings. (4) To establish districts for industrial and business establishments. (5) To prevent unnecessary congestion of population. (6) To expedite and simplify railway traffic. (7) To produce economy in city paving. (8) To provide comfort and convenience to the occupants of dwellings, offices and factories, and to reduce the cost of living.

The object of city planning and zoning is to give each person, in proportion to his or her income, the greatest value possible for every dollar expended by him or her in housing and business conveniences. That is to say, the man of small income should not be required to pay out for accommodations a greater proportion of his income than the proportion of income paid out by the man of greater means for the same quantity of accommodations. Under this scheme reference is had to the quantity not quality of accommodations. For example, the rent paid by a mechanic for a six-room house for his family should be, in proportion to his income, no greater than the proportion of income which the high-salaried manager pays for a six-room apartment for his family.

Origin of Zoning Practice.—The practice of dividing cities systematically into zones was originated in Germany in 1874 and most German cities have a large number of zones. For instance the city of Karlsruhe, with its population of 150,000 has as many as 16 zones or classifications, ranging from high-class residential sections to detached suburban home developments, and from civic centers to factory districts. Practically all European countries have adopted these plans. However, most divide their cities in fewer zones, which is the more practical plan. The city of Frankfurt-on-the-Main, so often referred to by city planners in other countries has nine zones, determined by the purposes for which the buildings in each are used. In addition there is a height regulation, which in some of the nine zones limits buildings to four stories.

When zoning was adopted in American cities, soon after the year 1900, it was applied principally to the height of buildings only. For instance, Baltimore, in 1914, restricted all buildings within a block of the Washington Monument to a maximum height of 70 feet. Previously the general maximum height of all buildings in the entire city was fixed at 175 feet. Boston, Mass., has been divided into District "A" in which no building must exceed the height of 125 feet; and District "B" where the height of buildings is limited to 80 feet. No building in either district must be more than two and one-half times the width of the street. In 1905 Indianapolis passed an ordinance limiting the maximum height of buildings facing Monument Place to 86 feet, and in 1912 passed an additional ordinance providing that no building in the entire city should exceed 200 feet in height. The original ordinance limiting the height of buildings facing Monument Place to 86 feet is still in force. In Washington, D. C., by act of

Congress, no building may be erected to exceed 85 feet in height.

American cities have adopted a comparatively primitive zoning system. With respect to zoning 'A Zoning Primer' issued by the advisory committee on Zoning of the Department of Commerce gives the following advice: "A zoning ordinance needs to be based on a comprehensive and detailed study of the precise local conditions, both present and prospective. What fits one city or town may be a bad misfit for another. There is no short cut to good zoning in any community through blindly accepting what has been done for another. The only safe path is a thorough, open-minded examination of the facts in each community as to existing uses, existing densities, and heights of buildings, the customs of the people, and the trend of affairs. In every city there are citizens and organizations having in their possession valuable knowledge of local conditions. These have a large contribution to make to those responsible for zoning, although those who have lived their whole lives in a community do not necessarily realize all that is going on about them.

"The zoning of a city requires expert professional knowledge just as the presentation of a case in court requires legal training. But just as the lawyer depends upon the layman to secure his facts, so must the professional zoning expert call upon the citizens for much of the accurate information upon which any good zoning regulations must be based.

"The practice of zoning is relatively new in America. We are feeling our way and must learn by experience. Those who have had experience tend to become expert, with broader knowledge of practices that are proving effective. These men are becoming gradually more skilled in the methods of getting at the essential facts. . . . If they possess insight and sane judgment, their advice becomes increasingly valuable.

"A zoning ordinance consists of one or more maps dividing the city into different kinds of districts; and a statement of methods of regulation to be employed in each district in regard to the use to which property may be put, the height and size of buildings, and the amount of space to be left vacant, with adequate provisions for enforcement.

"In the process of drafting a tentative ordinance, it is important, by means of full public discussion, to be sure that the ordinance is an 'application of common sense and fairness' and will 'provide each district, as nearly as practicable, with just such protection and just such liberty as are sensible in that particular district.' It is essential likewise to be sure that public opinion, as a whole will support it.

"A zoning ordinance is of value only as it is properly enforced. Because of the difficulty in making with precision the forecast on which it is based, its operation should be closely followed by those who most intimately understand the reasons for its provisions. Thus, improvements and adjustments may from time to time be made intelligently. It is to furnish in exceptional cases a means for remedying possible injustice that, in some States, provision is made for a board of adjustment or appeals.

"It is obvious from the nature of the case

that, even if a zoning ordinance were drawn with superhuman perfection, time and the natural growth of the community might show the need of modifications. The purpose of the zoning ordinance is not to stifle growth, but only to insure that instead of taking place sporadically and wastefully it shall go on in an orderly way, in response to generally recognized needs and with due notice to all concerned."

American Zoning Practice.—As stated above, the zoning regulations of most American cities relate primarily to the height of buildings while European practice goes very much more into detail, at least in Germany where zoning originated. Besides the American cities above mentioned, other cities have the following restrictions as to the limitation of the height of buildings: Chicago, 125 feet; Cleveland, 200 feet; Erie, 200 feet; Los Angeles, 150 feet; Manchester, 125 feet; Milwaukee, 225 feet; New Orleans, 160 feet; Portland, 160 feet.

New York City regulates the height of the buildings according to the Building Zone Regulation of 25 July 1916. In five districts the height of buildings is fixed according to the width of the streets at 1, 1¼, 1½, 2 or 2½ times the width of the street on which a building faces. Above these limits the buildings may continue in height by means of a set-back, as originally devised by a French architect for certain Paris buildings.

A set-back means briefly this: That if an owner wishes to carry a building to a greater height than is allowed on the street line, as, for example, above 90 feet on a 60 foot street, in a 1½ times district, he can add on an upper 30 feet, 10 feet back from the street line. He can make the set-back right from the height limit in the form of a mansard, which would slope back in a ratio of one foot horizontally to three feet vertically, or in a set-back of three and one-third feet for each of three stories, or in a set-back of 10 feet for the whole height, 30 feet; then he can set back again above the top of this set-back, provided he keeps in the same set-back plane.

In Scranton, Pa. (150,000 population), the zoning system as devised by the writer, provides for three general classifications: "Use District," "Height District" and "Area District." In the use district, buildings are classified according to the purposes for which they are used and five sub-districts are provided, viz.: Industrial zone, commercial zone, first residential zone, second residential zone and suburban residential zone. In the height district buildings are classified as suggested according to height and there are four sub-districts, viz.: A 35-foot district, a 60-foot district, a 100-foot district and a 150-foot district. In the area district limits are placed upon lots or plots of ground to be occupied by buildings, and in this classification also four sub-districts are provided, viz.: "A," "B," "C," and "D" districts.

In the industrial zone all land and buildings may be used for any industry which does not produce obnoxious odors or smoke, provided, of course, that the industry is one not prohibited by law or ordinance. Buildings used for all trades and purposes of storage, industry, com-

merce or residence may be erected in this district.

In the commercial zone, land and buildings may be used for stores, shops and studios; for offices for the conduct of wholesale and retail businesses; for places of amusement; for offices for police and fire departments, railroad stations, municipal administration, post office; telegraph, telephone exchanges; educational institutes; conservatories and dancing academies; but public garages, electric substations and car-barns can be erected and maintained only upon special permit from the city council.

In the first residential zone land and buildings may be used for high-class dwellings and apartment houses (with garages for owners' use only, so located as not to destroy the value of adjacent properties), churches, private clubs and schools.

In the second residential zone, land buildings may be used for single and multiple-family houses, tenements, lodging and boarding houses, private clubs, restaurants, stores, hospitals, sanitariums, undertaking establishments, public and semi-public institutions of an educational, philanthropic or eleemosynary nature, churches, bathing establishments, nurseries and green-houses, public garages for not more than ten cars; railroad passenger stations and the usual accessories located on the same lots with such buildings as are mentioned. Also offices for dentists, physicians, architects, engineers and other professional men can be located therein.

In the suburban residential zone, land and buildings are to be used for residences. The houses are to be set back from the street and surrounded with gardens, lawns, shrubs and trees. The plans call for winding streets according to the topography of the territory. Garages for owners' use only can be erected in the district but must be so located as not to destroy the value of adjacent properties.

Under the Scranton regulations it will be noticed that a residential building may be erected in the industrial zone, but an industrial building cannot be erected in the residential zone. All existing buildings not in conformity with the specified requirements for its particular zone, when once destroyed, cannot be rebuilt.

European Zoning Practice.—In order to obtain a broader view of zoning and regulations as to the height of buildings, the following examples regarding European cities are given. In Berlin the height of buildings varies, with some exceptions in accordance with the width of streets. The maximum height of cornice lines varies from 50 to 72 feet; although in Berlin are several streets from 100 to 190 feet wide. Above the cornice line a roof may be added, not to exceed 30 feet. These roofs, mostly mansards, may have rooms, but such rooms cannot be used for residence purposes.

In other German cities the cornice-line regulations are as follows: Bremen, 62.3 feet; Breslau, 72.2 feet; Köln, 65.6 feet; Dresden, 72.2 feet; Düsseldorf, 65.5 feet; Frankfurt-on-the-Main, 65.6 feet; Hamburg, 78.7 feet; Kiel, 72.2 feet; Leipzig, 72.2 feet; München, 72.2 feet; and Stuttgart, 65.5 feet.

Not only are the maximum and minimum heights of buildings regulated in German cities,

but also the maximum and minimum number of stories, depending, however, upon the zone in which the building stands. In Berlin and Hamburg, for instance, the majority of buildings must be either four or five stories high (in American practice the minimum height of buildings is not regulated). Throughout the state of Baden the number of stories runs from three to five in the suburban and outlying districts, three being the maximum, and in business districts, five. In München, Köln, Düsseldorf, Halle and Breslau, all buildings must be at least two stories high, but in Bremen one-story buildings may be erected. In Baden, homes in the country districts are not permitted to be over two stories in height.

In connection with the regulation of the height of buildings, German cities also regulate the height, area, cubic contents and the amount of light of each room. The minimum height of the room is generally placed at not less than 8.2 feet, while the window area must be from one-eighth to one-twelfth of the floor area. The size of rooms is regulated in accordance with classes of buildings. For instance, the regulations governing workmen's homes call for an apartment consisting of not less than three rooms—a living room, a sleeping room and kitchen. The living room is required to be of a specified size in Wiesbaden, 75 square feet; throughout Baden, 107 square feet; in Karlsruhe, 130 square feet; in Mannheim, 160 square feet; as the minimum. In the latter city the kitchen must not be less than 130 square feet in area. There are also requirements as to the total area of the rooms, which in Düsseldorf, Magdeburg and throughout Sachsen must not be less than 320 square feet.

In Paris also the height of buildings is regulated according to the width of streets, plus an arbitrary unit for additional height to the cornice line. For instance, on a street 10 metres, or 32.8 feet wide, 19.68 feet may be added; thus the maximum height of the building would be 62.48 feet. On a street 65.60 feet wide, 6.56 feet may be added; thus the maximum height would be 72.16 feet. On all streets wider than 65.60 feet (20 metres), no building must be higher than 65.60 feet. On the other hand, with narrow streets this arbitrary addition may be more than the actual width of the street; for instance, streets (alleys) from 1 to 6 metres (3.28 to 19.68 feet) the maximum height of the cornice may be 22.96 feet for the 3.28 foot street, and 39.36 feet for the 19.68 foot street. Above the cornice line may be added a mansard roof, the outline of which follows a tangent described at the elevation of the cornice line, and having a radius of one-half the width of the street, the tangent striking a line drawn at an angle of 45 degrees. These are the general and broad features for Paris regulating the height of buildings; numerous other details are in force to suit the various conditions which may arise.

In London the general limit for the maximum height of buildings is 80 feet above the sidewalk; to this may be added two stories in the roof or ornamental tower or other architectural features. Roofs must have an angle of not more than 47 degrees to the vertical

line, while for warehouses this angle may be up to 75 degrees. These laws were enacted in 1894 and still exist today. However, recent reports indicate that for buildings facing open squares or on the Thames, greater heights are under consideration.

In other European cities the heights to the cornice lines are: Edinburgh, 60 feet; Rome, 78.5 feet; Stockholm, 72.2 feet; Vienna, 82.0 feet and Zürich, 43 feet.

In the majority of German cities the proportion of ground that may be built over is three-quarters of the area of the lot. In this class are cities like Altona, Breslau, Bochum, Coblenz, Köln, Dortmund, Darmstadt, Frankfurt-on-the-Main, Görlitz, Halle, Kiel, Karlsruhe, etc. In comparatively few cities four-fifths of the lot may be covered, while in some other cities up to seven-tenths of the lot may be built over. In quite a number of cities two-thirds of the lot may be covered, for instance: Erfurt, Magdeburg, München, Hannover, Münster, Rostock, etc. In Berlin the amount of the lot that may be covered is fixed by dividing the lot into strips. The first strip, that measured back from the building line to the extent of six metres (19.68 feet) may be built up; the second strip, to a depth of 104.94 feet, may be built over to the extent of seven-tenths. Similar restrictions are in force in Cassel, Wiesbaden, etc. There are still other rules for different cities.

Zoning is Legal.—When a zoning law is properly drawn there is little doubt that the courts will support it. Enough favorable decisions have been handed down to show that the courts regard laws and ordinances regulating the use of land and the structures thereon, in accordance with the character of the district in which they are situated, as a reasonable exercise of the police power "for the public health, safety and general welfare." In fact, the courts have approved zoning whenever it was done sensibly and comprehensively. The first case arose in Boston, Mass., where two different heights for future buildings were fixed throughout the city. This was supported by the highest court of Massachusetts and the United States Supreme Court. (*Welch v. Swasey*, 214 U. S. 91.)

The next important case arose in Los Angeles, Calif., where, under the zoning plan, which divided the city into industrial and residential districts, a brickyard in the residential district was ousted, although it had been in existence for many years. Both the California courts and the United States Supreme Court held that the ouster was a proper exercise of police power. Modern zoning ordinances are not retroactive, however. (*Hadacheck v. Sebastian*, 239 U. S. 394.) As showing how far the courts will go in distinguishing between zoning districts the best case was that of the State of Ohio *ex rel. Morris v. Osborn et al.*, 22 N. P. (N. S.) 549, in which the court held that one and two-family houses were less subject to noise, litter, danger of contagion, and fire risk than multi-family houses, and that they could be placed in different districts under the police power. This case, however, was not appealed to a higher

court, and it cannot be said whether other States will follow it. In New York State the highest court has declared the zoning of New York City to be constitutional, stating that zoning can be done under the police power if done with care and good judgment so as not to be arbitrary or confiscatory. (*Lincoln Trust Co. v. Williams Building Corporation*, 229 N. Y. 313.)

FRANK KOESTER.

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CIVIL SERVICE REFORM LEAGUE. National, an organization founded in 1881 for the purpose of putting an end to the so-called spoils system of making appointments to minor public offices. Its primary object is to promote administrative efficiency through a system of appointment, promotion and removal of governmental employees. The league was especially active in 1922. On 27 April it called a public meeting in Washington to protest against what its officers regarded as a serious attack by certain public officials upon the civil service system. One subject of protest was the dismissal of the director and 30 employees of the Bureau of Printing and Engraving on 31 March. However, various other happenings at Washington were generally and emphatically condemned by officials of the reform league. It disapproved in no uncertain terms certain changes inaugurated in the method of appointing first, second and third class postmasters, whereby it became permissible to select one out of the first three instead of the first name on the list in every case. A committee appointed to make an investigation recommended first: that the rule for appointing the highest man on the list, as was done before the President's order of 10 May, should be restored; second, that then an effort should be made to include presidential postmasterships in the classified civil service by act of Congress; and third, that then a subsequent executive order should require the appointment of the highest man.

The league's committee on foreign service made an investigation and report concerning appointments in the foreign service during the first year of President Harding's administration. The report showed that in the consular service there had not been a single exemption from the examination system and that in the diplomatic service the appointments made as chiefs of mission were largely of persons of experience. In the report the committee urged further executive and Congressional action on its recommendations made in 1919, particularly to increase the salary schedules in all branches of the foreign service; to improve the entrance examinations so that they may be more strictly on a merit basis; and finally, to apply the merit system to the selection of all ministers and Ambassadors, not to eliminate entirely the selection of qualified men from outside the service for important ambassadorial posts, but to insure more definitely a career in the foreign service for ambitious young men who wish to enter the lower grades and rise to the top.

The 42d annual convention of the league was held at Washington on 7 December when further protests against alleged spoilsmanship at

the national capital were voiced. At this meeting the council of the league presented its annual report in which it demanded that the Congress repeal all laws giving preference to World War veterans in Federal appointments and attacked the appointment of prohibition agents and other Federal employees. At this meeting Chief Justice Taft, of the Supreme Court, suggested that the President be given power to make all appointments to local offices without Senate confirmation. The officers of the league are Richard H. Dana, president; A. S. Frissell, treasurer; Harry W. Marsh, secretary, and Arthur B. Kimball, chairman of the executive committee. The principal office of the league is at 8 West 40th Street, New York City.

CIVIL SERVICE RETIREMENT FUND. See PENSIONS.

CIVIL SERVICE, United States. In its annual report for the fiscal year 1922, the United States Civil Service Commission stated that at the end of the year (30 June) Civil Service employees numbered 560,863 as against 438,057 on 30 June 1916 and 917,760 on 11 Nov. 1918. Of the number in the Service on 30 June 1922, 69,980 were in the District of Columbia and 490,883 outside the District. Persons examined under the Civil Service law during the fiscal year 1922 numbered 206,007; appointees numbered 62,488. Despite the large number of appointments, the number of employees was reduced 36,000 during the year.

CLARK, Charles Edgar, American naval officer: b. Bradford, Vt., 10 Aug. 1843; d. Long Beach, Calif., 1 Oct. 1922. He was appointed from Vermont to the United States Naval Academy, and was graduated in 1863. His naval career was varied. In 1863 he was ordered to the west gulf blockading squadron in the Civil War and a year later took part in the battle of Mobile Bay. He was shipwrecked off the coast of British Columbia in 1868 when the *Suswance* foundered, and through the loss of his superior officer he became commander of the 33 survivors. He organized them into a defensive party to hold off 400 Indians until he was rescued. He served on the Pacific, West Indies and Asiatic stations; was attached to the Brooklyn, League Island and Portsmouth navy yards. He was also instructor for a time at the United States Naval Academy. He spent three years in surveying the North Pacific Coast and four years in inspecting lighthouses. It was Rear Admiral Clark, who, as a captain, commanded the battleship *Oregon* on its famous voyage from San Francisco to Key West during the Spanish-American War (1898). While on board the *Oregon* he helped destroy the Spanish fleet at Santiago and was advanced six numbers in rank for distinguished services. At the age of 59 he again was advanced in rank seven numbers and promoted to Rear-Admiral. He rounded out his career as commander of the League Island navy yard; as governor for three years of the Naval Home at Philadelphia, and as president of the naval examining and retiring board. In 1905 he received the degree of LL.D. from the University of Pennsylvania, and in the same year on his 62d birthday was retired from active service.

CLARK UNIVERSITY, a Methodist Episcopal co-educational institution, founded in 1869 and located at South Atlanta, Atlanta, Ga. In 1922-23 it had a faculty of 20 members, 517 students, property valued at \$550,000 and an income of approximately \$60,000. J. W. Simmons is president.

CLARK UNIVERSITY, a non-sectarian institution founded in 1887 and located at Worcester, Mass. The undergraduate department is for men only, but the graduate department is co-educational. In 1922-23 it had a faculty of 34 members, and a total student enrollment of 540, 206 in the undergraduate department, 161 in the graduate department and 173 in the summer school. No figures given as to the value of the institution's property or its income. Wallace Walter Atwood, Ph.D., is president.

CLARKE, Alfred, Anglo-American inventor and mechanical engineer: b. Leicester, England, 4 June 1849; d. Walpole, New Hampshire, 1922. He was educated in the public schools of Leicester and in the department of science and arts at South Kensington, London. He came to America in 1874 and was chief engineer of the Bradley Fertilizer Company at North Weymouth, Mass., 1876-77; and superintendent of the Kitson Machine Company of Lowell, Mass., 1877-85. While connected with the last mentioned concern he invented improvements in cotton machinery which are now used in every cotton mill in the world. He was general manager of the Prospect Machine and Engine Company of Cleveland, Ohio, 1885-87. In association with Arthur E. Childs, Mr. Clarke founded The Light, Heat and Power Corporation of Boston, which led to the formation of the Massachusetts lighting companies, owning some 27 gas, electric light and power companies in that State. Mr. Clarke was made president of the company, retiring in 1915. He was a director of the American Investment and Securities Company, the Columbia National Insurance Company, the Massachusetts Trust Company and the Hotel Somerset Company. He was a member of the American Society of Mechanical Engineers, the Society of Arts, and of various Masonic bodies. He was the engineer who installed the great telescope at the Lick Observatory in California.

CLARKE, John Hessin, American jurist: b. Lisbon, Ohio, 18 Sept. 1857. He was graduated from Western Reserve University in 1877, was admitted to the Ohio bar in 1878 and practiced in Lisbon until 1880. He then removed to Youngstown, practiced law there in 1880-97 and in Cleveland in 1897-1914. In 1914-16 he was United States district judge, northern district of Ohio. He was appointed by President Wilson to succeed Charles E. Hughes, when the latter resigned from the United States Supreme Court in 1916 to accept the Republican nomination for President. After six years of service as an associate justice of the Supreme Court, Justice Clarke resigned on 18 Sept. 1922, his reason expressed being the desire to devote himself to "some public causes in ways in which I cannot serve them while holding office." Justice Clarke was long associated politically with Newton D. Baker, former Secretary of War, and it was upon Mr. Baker's recommendation that President Wilson appointed him Federal judge for the

Cleveland district in 1914 and two years later to the Supreme Court. On the Supreme Bench he stood with Justice Brandeis in supporting the minority opinions in many important decisions. Justice Clarke is a progressive Democrat and championed and campaigned for many liberal policies when they were considered almost revolutionary. In 1903 he was unsuccessful candidate for United States senator against Mark Hanna; and in that campaign he was one of the first political advocates of the direct election of United States senators by the people. He also advocated two-cent fare for railroads; independence for the Philippines; publicity of campaign expenditures; and home rule for cities. In 1914 he was a candidate for senator, but withdrew. He was a staunch supporter of President Wilson and the League of Nations, and recently in an address at Cleveland, advocated cancellation of the Allied debt to this country.

CLASSICAL LITERATURE AND SCHOLARSHIP. See PHILOLOGY.

CLAY. Varieties of clay available for the manufacture of clay products are widely distributed and there are clay-working plants in every State of the Union. In the following statistics only clay that is mined and sold as clay is included. The quantity thus sold is small compared with the total output and includes mainly clay used for making high-grade pottery and tile, and refractory products. The general business depression that set in late in 1920 had a marked effect on the clay-mining industry in 1921, the output decreasing 45 per cent and the value 48 per cent as compared with 1920. Fire clay, which showed the largest output in both quantity and value decreased 49 per cent in quantity and 52 per cent in value as compared with 1920. Imports and exports of clay decreased in even greater proportion than domestic production. In 1921 the total clay mined and marketed in the United States of all varieties aggregated 1,716,746 short tons, valued at \$6,025,300, as compared with 3,116,212 short tons valued at \$11,614,288 in 1921. This total included in 1921, 1,195,861 short tons of fire clay valued at \$3,560,373; 162,726 short tons of kaolin and paper clay valued at \$1,579,163; 54,014 short tons of ball clay valued at \$354,565; 4,608 short tons of slip clay valued at \$14,841; 86,574 short tons of stoneware clay valued at \$184,540; and 212,963 short tons of miscellaneous varieties valued at \$331,818.

New Jersey led all other States with an output valued at \$1,049,748, followed by Missouri with an output valued at \$938,135 and Pennsylvania with an output valued at \$895,394. Georgia was fourth with clay products valued at \$400,215; Florida fifth with \$388,751 and California sixth with an output valued at \$341,288. In 1921 47,445 short tons of clays were exported from the United States valued at \$361,428. In the same year 208,915 short tons valued at \$1,974,685 were imported. Kaolin or china clay led all other varieties with imports of 162,906 tons valued at \$1,546,285. The exports included 23,666 tons of fire clay valued at \$177,979.

CLEMENCEAU, Georges. See FRANCE, subsection HISTORY.

CLEMSON AGRICULTURAL COLLEGE, a State educational institution for men, founded (Act of Acceptance) 1889 and located at Clemson College, S. C. In 1922-23 it had a faculty of 79 members, 1,463 students, property valued at \$2,045,920.78 and an estimated income of \$383,343.64. Walter M. Riggs, LL.D., is president.

CLIMATE. See METEOROLOGY.

CLOTHING INDUSTRY. This industry is nearly evenly divided between men's and women's clothing manufacture. Its general condition at the opening of 1923 was encouraging; the one factor against probable high records is found in the maintenance of high costs. Prices have not gone down since the war as much as in many other lines. General costs rose during the war 80 per cent and wool rose 110 per cent. The last official figures are of 1921 census, when 4,543 manufacturers of men's clothing handled \$147,551,000 of materials, and produced goods valued at \$933,249,000. Of the \$249,011,000 paid in salaries and wages, the wage workers got \$201,365,000. In women's clothing in 1919 there were reported 7,711 concerns, with \$391,000,000 capitalization, handling \$678,000,000 of materials, and producing \$1,209,000,000 worth of goods. Though the women's clothing product was slightly greater, they paid only 30 per cent of the tax turned in by the makers of men's clothing. Salaries totaled \$254,000,000 of which the wage workers got \$195,000,000. In 1922 it is believed that the total valuations are perhaps 10 per cent below the census year.

Within the past few years the trades unions have greatly strengthened their positions in the clothing industry. The Amalgamated Clothing Workers of America nominally covers the United States and Canada for men's clothing, but in reality its total of 150,000 members is nearly all found in the following cities: New York, 50,000; Chicago, 40,000; Rochester, 12,000; Baltimore, 8,000; the remainder being in Philadelphia and very many smaller cities. The women's clothing branch of the industry is represented among the workers by the International Ladies' Garment Workers, with some 50,000 members. Smaller organizations are the Hat and Cap Workers Union and the Needle Workers Union. The two larger organizations named have in a large degree done away with sweatshop work in the cities cited, have raised the level of wages and shortened hours, the 44 hour week being prevalent. The Amalgamated has given \$200,000 to the Russian Relief Fund, and gave \$100,000 to the steel strikers. The International Ladies' Garment Workers gave \$50,000 in 1922 to the striking miners, and pledged another \$50,000. The Amalgamated has agreements with the employers' organizations, for arbitrating differences, and so far the system works well. When there is a difference an "impartial chairman" is chosen by both sides, and under his direction the matter is thrashed out.

Because clothing manufacture is a seasonal business, there is more or less distress from unemployment. To reduce this to a minimum the Amalgamated Workers are now concentrating on an effort to establish a system of unemployment insurance, premiums to be paid for by the

bosses, so that there shall be a financial inducement to employers in the trade to keep their men on the payrolls as many months as possible. This experiment is being seriously discussed, and its development will be watched with interest by other trades.

CLOVER, Red. See PLANT INDUSTRY, BUREAU OF.

CLOVER SEED. In its final report for the year, the United States Department of Agriculture estimated the 1922 clover seed crop of the United States at 1,875,000 bushels, valued at \$18,905,000, compared with 1,538,000 bushels valued at \$16,529,000 in 1921 and 1,944,000 bushels valued at \$23,227,000 in 1920. The acreage harvested during the three years was as follows: 1922, 1,126,000; 1921, 889,000; 1920, 1,082,000. Illinois with 315,000 bushels led in production. Michigan came second with 240,000 bushels; Wisconsin, third with 229,000; Ohio, fourth with 227,000 bushels; Iowa, fifth with 224,000 bushels and Minnesota, sixth with 151,000 bushels. In 1921 Ohio led with 206,000 bushels, while Illinois was second with 200,000 bushels. In 1920 Illinois led with 333,000 bushels and Wisconsin was second with 327,000 bushels.

COAL. Notwithstanding the strike of more than 500,000 union bituminous miners which lasted approximately five and a half months beginning 1 April, the total bituminous coal production of the United States for the year 1922 was 407,894,000 net tons (Geological Survey figures) as against 415,921,950 during 1921. The anthracite production for the same period was estimated at 52,485,000 net tons, as against 90,473,451 in 1921. To these figures should be added beehive coke, 8,030,000 tons for 1922, as against 5,588,000 tons the year before.

The reduced coal production of the United States in 1922 as shown above, existed almost wholly in the anthracite field, where it fell off 39.2 per cent. The bituminous reduction was only 1.9 per cent, these being Geological Survey estimates. The consumers who had to do without anthracite fell back on bituminous, so that the shortage in this appeared more acute than it really was. The coal supply in the Eastern States was helped out by the importations of British coal, which appeared in New York in July, and was a helpful factor for many weeks, continuing in reduced quantity throughout the year.

The chief disturbing factors in the coal situation during the year were the strike above referred to which was called by the United Mine Workers and the Railway Shopmen's strike which began 1 July. The coal strike brought about a complete suspension of mining in both the anthracite regions and in those bituminous regions where union labor was exclusively employed. While the shopmen's strike tremendously interfered with the movement of coal and was mainly responsible for the coal shortage in certain communities later in the year, because when production returned to normal railway equipment shortage existed.

While there had been numerous strikes in bituminous and anthracite fields in former years, never until 1922 did the United Mine Workers decree a simultaneous strike in both

fields. With certain exceptions, the non-union miners continued working during the strike and shortly after its beginning, were producing as much as 5,500,000 tons a week or more than 50 per cent of current needs. This production coupled with the fact that in anticipation of the strike consumers had stored large stocks of coal before the strike started, enabled the country to get along for several months with but little inconvenience.

Six weeks after the strike began, a buying wave drove the price of spot coal at non-union mines up to an average of \$3.67 per ton. Back in 1920, when production totaled 10,000,000 tons a week, prices had risen to from \$11 to \$12.50 at the mines. It was, therefore, considered essential by the Federal authorities, when the 1922 rise in prices started, to at once take steps to prevent a repetition of what had taken place in 1920. Consequently, on 15 May, Secretary Hoover of the Department of Commerce called a conference of the leading operators in the non-union producing fields and preliminary discussion resulted in the determination to organize the needed restraint and to call a general meeting of operators on 31 May. The effect of this move was reflected in a drop of from 60 cents to \$1 a ton in the price of coal. At the meeting of 31 May it was agreed that coal prices should not be advanced beyond the Garfield prices plus a reasonable allowance in each district for the differences in wage scales and cost which had ensued since the war. The prices agreed upon varied from \$2.20 to \$3.50 at the mine. Approximately 85 per cent of the producing districts agreed to the arrangement and the price of spot coal in these areas was held to an average of under \$3.25, whereas in the districts which had refused to enter the agreement prices rose to as high as \$10 per ton at the mines. At the end of July some districts withdrew from the agreement, although about 65 per cent of the non-union operators adhered to it until 15 August when the strike was settled and the agreement automatically expired. Notwithstanding the fact that, as indicated, certain districts refused to enter into the agreement, the average price of spot coal for the entire period of the strike was kept down to \$3.70 while the average price of contract coal was about \$2.60. When the agreement expired, prices again started to advance, some mines charging from \$7 to \$10 per ton, the maximum average being for a few days about \$6.66 per ton. On 18 August the President asked Congress for legislation to enable the Federal government to co-operate in a more practical way with the States to control distribution and prices. A buying strike followed and prices again receded. On 22 September, Congress passed an act giving the Interstate Commerce Commission the right to establish priorities and embargoes against persons charging profiteering prices from the mines in interstate coal and providing for the appointment of a temporary Federal fuel distributor. This office was filled on the same day by the appointment of Conrad E. Spens, vice-president of the Chicago, Burlington and Quincy Railroad. He took the place of H. B. Spencer, who, since 26 July, had been serving by appointment of the President as voluntary fuel distributor. Several States, likewise, appointed fuel distributors, who

devoted their energies to securing coal for householders at reasonable prices. Congress also authorized the appointment by the President of a coal fact-finding commission of seven members and on 10 October the executive named the following commissioners: John Hays Hammond, chairman; Thomas Riley Marshall, former vice-president of the United States; Judge Samuel Alschuler of Chicago; Clark Howell of Atlanta; George Otis Smith, director of the United States Geological Survey; Dr. Edward T. Devine of New York, and Charles P. Neill of Illinois. In its first report to Congress made 15 Jan. 1923, this commission stated that wide-spread profiteering, over-development of the mining industry and recurrent strikes during the last few years are responsible for the high coal prices. It issued the warning that unless the industry reforms itself through the elimination of strikes and surplus miners Federal regulation will be necessary. "Whatever the cause or the merits of the labor controversy," said the report, "indefinite repetition of these crises in production and distribution would be intolerable. Industry and home alike must be freed from the menace of constant interruption of the coal supply." The report which is to be supplemented by a later report went on to state that the number of miners has increased in the last few years until it is now 200,000 in excess of demands. The present number, it was stated, is sufficient to mine 800,000,000 tons a year or about 250,000,000 tons more than the largest production this country and foreign markets have ever been able to absorb. The car supply, it was stated, had been virtually adequate for some months and the railroads had been moving a supply that under normal winter conditions would far exceed the demand. "Collective bargaining," says the report "should rest upon reason rather than force. American law and public opinion recognize the right to organize into unions and the right to work without let or hindrance. There has been profiteering in the sense that grossly exorbitant profits have been taken at times by many operators, brokers and retailers." The commission stated that in a later report it would attempt to reveal these profits and the earnings of the miners. The strike of the union coal miners was settled by what is known as the Cleveland agreement which provided that the men should return to work at the old rate of pay and that this agreement should continue in effect until 21 March 1923. On 24 Jan. 1923 this agreement was extended until 1 April 1924 by a joint understanding of the bituminous operators and union miners in Ohio, Indiana and Illinois, which produce 36 per cent of the nation's tonnage and it was predicted that it would be extended in other fields.

The soft coal miners lost approximately 20 weeks during the year, but there were large stocks on hand at the beginning of the strike (approximately 75,000,000 tons) the shortage of bituminous was more of a scare than a reality especially when coupled with non-union production of about 5,000,000 tons weekly. The hard coal strike lasted 162 days, and not only created a severe shortage of anthracite, but sent the prices bounding upward, despite governmental cautions and edicts.

The figures of coal production require to be modified by considering the importation and exportation of coal, to arrive at what coal was available for domestic consumption. For various reasons coal has to be exported at certain times and places, even when the home supply is curtailed. In 1922 the exportation was reduced about 60 per cent, and the importation more than doubled, while the bunker coal, with which outgoing vessels are laden for running their boilers, and which is not figured as exported, was reduced fully a half. These conditions added about 15,000,000 tons to the coal supply of the United States for the year just closed. The importation was almost wholly bituminous, the anthracite factor being only about 2½ per cent of the total. In 1921 this coal importation totaled about 800,000 gross tons, and in 1922 rose to about 3,500,000 gross tons. Two-thirds of this came from the United Kingdom, and most of the remainder from Canada. Nevertheless we sent more coal into Canada than Canada sent to the United States. The importations from the United Kingdom began in July, being promoted by the high prices ruling in New York, and were heaviest during July and August, reducing gradually as prices lowered. That which came over during the strike period brought from \$6 to \$7.50 per gross ton.

There are (in 1923) nearly 9,000 coal mines in the United States, some 3,500 wholesalers, and 38,000 retailers of coal. In addition, 180 railroads find coal carrying a large part of their business, and there is extensive shipping of coal on the Great Lakes, and from every seaport. Three-quarters of a million men are employed in coal mining, nine-tenths of them working underground. Their work is irregular because coal mining is a seasonal industry. Coal is so bulky that consumers do not want to store for many months ahead of their needs. In the anthracite industry of the United States \$430,000,000 of capital is invested, while \$1,900,000,000 is invested in the production of bituminous coal and coke.

The Geological Survey's estimate, in net tons, of the 1922 coal production of the United States by States was as follows: Alabama, 16,100,000; Arkansas, 950,000; Colorado, 10,004,000; Illinois, 59,100,000; Indiana, 17,330,000; Iowa, 4,600,000; Kansas, 3,100,000; Kentucky, 40,100,000; Maryland, 1,100,000; Michigan, 940,000; Missouri, 2,700,000; Montana, 2,400,000; New Mexico, 3,100,000; North Dakota, 1,180,000; Ohio, 26,500,000; Oklahoma, 2,800,000; Pennsylvania (bituminous) 105,000,000, (anthracite) 52,485,000; Tennessee, 4,600,000; Texas, 1,000,000; Utah, 4,864,000; Virginia, 11,100,000; Washington, 2,400,000; West Virginia, 81,000,000; Wyoming, 5,800,000; other States,—Alaska, California, Idaho, Georgia, North Carolina, Oregon and South Dakota —126,000. Total bituminous, 407,894,000; total anthracite, 52,485,000; grand total, 460,379,000.

The householder naturally thinks of the coal industry largely in terms of his own costs, especially in the Eastern States, where the use of anthracite coal has become a habit. Yet this retail business is really the small end of the industry. The 38,000 retailers do handle two-

thirds of the anthracite production, which is normally over 80,000,000 gross tons, but they sell only 14 per cent of the very much larger bituminous production of the country. The railroads are themselves the greatest users of bituminous coal, consuming 29.8 per cent of the bituminous and 5.9 per cent of the anthracite normally produced. Then there are the steamships, the gas and electric light and power companies, and various large industries. In all there are in the United States 90,000 buyers who order coal in carload lots.

No other common standard commodity is subject to such instability of price as coal, the cheaper kinds selling as low as \$2 a ton at the mines, and the best anthracite commanding \$14 to \$18 a ton retail in some localities. Even large buyers had to pay three times as much for bituminous at the peak of the coal strike, as it could have been bought for in March and April.

Because of the over-development in the bituminous mines, coal is taken out during only 70 per cent of the working days of the year. There are also strikes and car shortages that cause irregular shutdowns. The workers contend they have a hard time making a living. The average American miner's output is almost four gross tons per working day, which is said to be about double the output of workers in the mines of Europe. The difference is due to the improved coal-cutting machinery used in the United States mines. During the first three months of 1922 the spot price of bituminous coal at the mines averaged \$2.15 a ton. In March when large consumers began to buy for stock it stiffened to \$2.25, but fell off to \$2.06 the first week in April. During this first quarter consumers' stocks are believed to have increased about 15,000,000 tons. Production had ranged from 7,476,000 tons during the first week in January to as high as 11,448,000 tons in the second week of March. Then came the strike, coupled also with the usual seasonal dullness, and production dropped to 3,835,000 tons in the first week of April. The weekly range was between that figure and 6,736,000 tons (produced during the week ending 26 August) until it jumped to 9,359,000 tons during the week ending 2 September. From that time on it ranged up to as high as 11,215,000 tons for the week ending 18 November. British coal began to come into New York when the price was close to \$7 a ton and helped to keep the figure down. After 18 November production continued throughout the remainder of the year at about 10,000,000 tons per week, this serving to bring the year's bituminous total near the usual figures. The January 1923 production was high.

The United States Census of Manufactures for 1919 reports a more normal year of the coal industry, and its totals are given here for comparison. The official figures are in short tons, and therefore about 11 per cent higher than when figured in gross tons. The total production was 5.24 tons per capita, or 548,596,000 short tons, of which 460,426,000 was bituminous and 88,170,000 anthracite. The total value of the product was \$1,510,062,000, of which \$81,665,000 went in salaries, and \$892,-

890,000 was paid in wages. The workers are thus shown to have received 59 per cent of the value of the coal at the mines, but they had to pay for certain tools and supplies.

Almost all the anthracite coal is mined in Pennsylvania, which is also the largest producer of bituminous, 150,000,000 tons in the census year. West Virginia followed with 79,000,000, Illinois 60,000,000, Ohio 35,000,000, Kentucky 30,000,000, Indiana 21,000,000, Alabama 16,000,000 and Colorado 10,000,000. The production per wage earner in 1919 was, in short tons — anthracite 592 and bituminous 844. For every quarter of a million tons mined there is one miner killed, the average fatalities being over 2,000 per year.

The foreign trade of the United States in coal has been fairly regular since the close of the Great War. We import annually about 1,250,000 long tons of bituminous coal and export 20,000,000 tons, but in 1920 our exports rose to 34,410,033 tons, only to fall in 1921 to 20,652,000 tons and then in 1922 dropped to 11,083,000 tons. The anthracite export has been normally 4,500,000 long tons, and the importation of anthracite has been very small and irregular. Anthracite exports in 1922 totaled 2,365,187 (2,296,830 to Canada) tons valued at \$25,350,677. The following table compiled by the *Black Diamond* shows exports of bituminous coal, in gross tons, from the United States by calendar years, for the past 10 years:

YEAR	Canada	Overseas	Total
1913.....	13,496,190	4,490,567	17,986,757
1914.....	9,170,901	4,630,949	13,801,850
1915.....	8,354,365	8,410,492	16,764,857
1916.....	11,839,447	7,137,899	18,977,346
1917.....	16,177,571	5,107,749	21,285,320
1918.....	16,191,364	3,764,645	19,956,009
1919.....	10,669,490	7,289,024	17,958,514
1920.....	14,491,252	19,899,002	34,390,254
1921.....	11,961,366	8,691,422	20,652,827
1922.....	9,675,320	1,407,792	11,083,112

Bituminous exports in 1922 were valued at \$65,891,740, of which Canada took \$57,385,322.

Alaska has vast undeveloped coal fields, and mining has begun there in a small way. The production in 1922 was about 60,000 tons, mostly from the Matanuska and Nenana fields. The development will go on for local use, but when Alaskan high-grade coal can be mined for export is a question.

Canadian coal is nearly all bituminous, and the production in 1921 was 14,492,418 long tons, of the value of \$74,273,000. The 1922 production, not yet officially declared, will be slightly more. Most of the production is in Nova Scotia and Alberta, though the British Columbian mines turn out about 3,000,000 tons annually.

There is a large movement of coal through the Great Lakes, most of which comes to United States ports, though Canada uses considerable. Bituminous coal tonnage through the canals at Sault Ste. Marie during the summer of 1922 fell off 30 per cent. The total movement was 8,790,571 net tons, against 12,507,027 in 1921. The anthracite tonnage was only 670,447 against 2,256,128 in 1921, a decline of 70 per cent. The canals opened 17 April, and the United States canal closed 20 December, the Canadian canal 24 December. Figures on

bituminous dumpings at Lake Erie ports for the 1922 season, furnished by the Ore and Coal Exchange of Cleveland, show a total dumping of 18,522,142 tons, as compared with 22,412,380 tons in 1921 and 22,408,355 in 1920. The dock shipments of coal cars from Superior and Duluth were in 1922, 245,683 cars, as compared with 161,922 during 1921. The largest movement was in June, July and December. The anthracite shipments on the nine coal railways running from the Pennsylvania fields to the coast, were 6,420,120 tons in December, 1922, as compared with 4,635,922 during the same period of 1921.

The coal reserves of the United States and Alaska are enormous, nearly half of the known coal reserves of the world. They are estimated at over three and a half trillion tons, of which over 16 billion tons are anthracite. This latter is located almost wholly in Pennsylvania, while that State is estimated to have over a 100 billion more tons of bituminous coal underground, West Virginia is credited with as much more. At the present rate of consumption this coal should last the American people 6,000 to 7,000 years. But the rate of consumption increased 37 per cent during the decade between the 1909 and 1919 censuses.

The coal production of the rest of the world outside of the United States is believed to be normally, almost one billion short tons annually, but of late years it is of course a very uncertain quantity. Great Britain is the largest producer, though not having the largest coal fields. Her production in 1921 was only 163,265,000 gross tons, but in 1922 reached the more normal product of 259,839,000 gross tons. Germany used to produce nearly as great a tonnage, mostly from the Ruhr district. The production from that territory in 1922 was 93,298,174 metric tons.

Great Britain shipped a total of 64,198,384 gross tons in 1922 to ports all over the world, the largest buyers being France, Germany, Italy and Austria-Hungary, followed by Belgium, the Netherlands and Sweden. Thus the United Kingdom has returned to its prewar supremacy in the matter of having surplus coal for export. Germany used to be a competitor in supplying countries where the coal is not sufficient for local industry.

While the United States has shipped some coal to Europe, yet the higher cost of labor here prevents any large export supply from America.

According to the United States Geological Survey, the world's coal production in 1921 dropped back to the level of 1909, the total output being 1,120,000,000 metric tons, a decrease of nearly 200,000,000 tons compared with production in 1920. The world-wide industrial depression of the year, coupled with the strike of the British miners, were the chief causes of the decrease. The word "coal" as used by the Geological Survey includes lignite. The table given below was compiled by *The Black Diamond* and shows the world production of coal for the years 1909-21, inclusive together with the percentage produced by the United States. It was stated that the unit used was the metric ton of 2,205 pounds, the approximate

equivalent of the long, or gross, ton. However, it is not exactly the same and the editor of the publication referred to states that the translation from net to gross tons gives many of the figures an unfamiliar look.

WORLD COAL PRODUCTION 1909-1921

Year	Production (in part estimated)	Per cent produced by United States
1909.....	1,110,000,000	37.5
1910.....	1,160,000,000	39.2
1911.....	1,189,000,000	37.9
1912.....	1,249,000,000	38.8
1913.....	1,342,000,000	38.6
1914.....	1,207,000,000	38.7
1915.....	1,189,000,000	40.6
1916.....	1,257,000,000	42.7
1917.....	1,325,000,000	44.6
1918.....	1,331,000,000	46.4
1919.....	1,168,000,000	43.1
1920.....	1,317,000,000	45.4
1921.....	1,120,000,000	40.0

The figures for the years 1914-1918 in this table are revised materially from those hitherto published by the Geological Survey, to conform to more accurate reports from the countries affected by the war. They are still subject to revision.

On 30 December there was made public a tentative plan of the United Mine Workers of America for the nationalization of the hard and soft coal mines of the country. This plan, which was put forward chiefly as a basis for discussion, placed the valuation on the soft coal industry of between \$1,500,000,000 and \$2,000,000,000 while it estimated the capital invested in the anthracite fields at \$432,000,000. The Union, therefore, estimated the total cost to the government of taking over the coal fields, including \$2,000,000,000 as the value of royalty payments, at \$4,500,000,000. The plan proposed as the basis of an organization for operating the mines and fixing prices a Federal Interstate Commission of Mines at the head of which would be a secretary of mines with a place in the Cabinet. For coal mine accidents, see MINES, BUREAU OF. See also STRIKES AND LOCKOUTS.

COAL STRIKE. See COAL; also STRIKES AND LOCKOUTS.

COAST GUARD, United States. According to the annual report of the United States Coast Guard, 2,954 persons were saved or rescued by the Guard from positions of peril during the fiscal year ended 30 June 1922. The number exceeds the rescues of 1921 by 1,333. Vessels boarded during the year numbered 21,586; vessels seized or reported for violations of the law numbered 596; fines and penalties imposed totaled \$135,990; derelicts and other obstructions to navigation removed or destroyed numbered 48; value of vessels assisted (including cargoes) \$35,346,765; value of derelicts recovered and delivered to owners, \$384,550. The appropriation for the maintenance of the Guard was \$9,811,857.50; expenditures, \$9,422,251.09; appropriation for repairs to cutters, \$360,000; expenditures, \$356,313.22. Out of an unexpended balance of the 1921 appropriation for new cutters, amounting to \$36,341.96, expenditures in 1922 amounted to \$32,998.99.

COASTLAND, a northeastern part of the Kingdom of Italy, formerly a part of Austria and ceded to Italy at the close of the World

War. Its area is about 3,000 square miles. The cities of Trieste, Goritzia and Pola lie within its confines. The population numbers 900,000. See ITALY for territorial divisions, products, etc.

COCHIN, BARON Denys, French statesman: b. Paris, 1851; d. there, 24 March 1922. He was a member of one of the oldest French Royalist families. His ancestors were connected with the Council of Paris in the time of Joan of Arc; and ever since the 15th century the Cochins have been prominent in French politics. His father was the writer, Pierre Cochin, mayor of the tenth arrondissement of Paris in 1871 and préfet of Seine-et-Oise. Baron Denys Cochin conducted himself valiantly during the war of 1870 in the 8th Cuirassiers under General Bourbaki and received a medal. He became a pupil of Pasteur, then he studied law and finally devoted himself to letters. In 1881 he was made municipal counsellor of Paris. During his long Parliamentary career he participated in all the artistic, financial and diplomatic discussions of the time. In 1914 at the beginning of the World War he was elected president of the group of Deputies of Paris who went to Bordeaux at the time of the threatened German invasion. In 1916 he was under-secretary of state for foreign affairs and in March 1917 M. Alexandre Ribot gave him charge of the blockade. Baron Cochin particularly distinguished himself in 1915 when as minister without portfolio he was appointed to co-operate with Lord Kitchener in the direction of Anglo-French policies in the Near East. The decision of Greece to enter the war on the side of the Allies was largely attributed to his visit to Athens. In 1911 he was made member of the Académie Française in place of Albert Vaudal. He published a number of books, including: 'L'évolution de la vie,' 'Le Monde extérieure,' 'L'Esprit nouveau,' 'Ententes et ruptures,' and 'Quatre Français' (Pasteur, Chevreul, Brunetiere and Vaudal).

COCHIN CHINA, the southernmost division of French Indo-China. It has an area of 22,000 square miles with a population of 3,452,248, of whom about 6,300 are Europeans. Saigon, the capital, had a population in 1921 of 72,372, including 4,601 Europeans exclusive of troops. Cholon has a population of 226,537, nearly one-half of whom are Chinese.

There are 870 schools in the district with 51,452 pupils and 1,325 teachers. There are under cultivation about 4,939,000 acres. Rice is the principal crop, over three-fourths of the cultivated area being given over to this crop. Other crops are Indian corn, beans, earth nuts, sweet potatoes, cotton, sugarcane, coffee, tobacco, betel nuts, bananas, pepper and oranges. There are 420,506 buffaloes, 247,623 swine, 13,683 horses and 2,860 sheep in the region. Fishing is a major industry, giving employment to thousands in about 76,000 boats and producing about 3,000,000 francs worth yearly. Rice, fish oil, cotton, silk, hides, pepper and copra are exported. The total value of the exports was 980,777,780 francs in 1919 and the imports the same year were valued at 84,202,744 francs. In

1920 and 1921 the overseas trade declined greatly below these figures, due to the general world depression. The annual budget is balanced at 9,000,000 piastres.

COCKRAN, W(illiam) Bourke, United States Congressman: b. County Sligo, Ireland, 28 Feb. 1854; d. Washington, D. C., 1 March 1923. He was educated in Ireland and France and came to the United States in 1871. For a while he worked in a department store in New York City, thereafter he taught in a private school and later became principal of a public school in Westchester County, N. Y. In the meantime, he studied law and was admitted to the bar in 1876. He soon became prominent in New York City politics and in 1881 was a delegate to the Democratic State Convention. In 1883 he joined Tammany Hall at the invitation of John Kelly. In 1886 he was elected to Congress; again elected in 1890-92 and 1904. Mr. Cockran twice left the Democratic Party. In the campaign of 1896 he advocated the gold standard and campaigned for McKinley. In 1912 he joined Roosevelt's Progressive Party. Returning to the Democratic fold before the convention of 1920, he was nominated as Representative to Congress and elected from the 16th New York district; he was re-elected in 1922. Another public service performed by him was in 1890 when he served as a member of the commission appointed by the Governor of New York under a special statute to revise the judiciary article of the State Constitution. Every chapter in that long public career was colorful and replete with inspiring oratory. Recalling examples of that mastered art, one thinks first of his especially generous plea for the cause of Cuban Reciprocity early in the century. More widely known, of course, were his speeches against Grover Cleveland at the Democratic National Conventions of 1884 and 1892; his "sound-money" speech for McKinley (1896) in Madison Square Garden; at Chicago, in 1899, his "Gold Democrat" speech; his anti-Crocker speech in the New York City Club, 24 May 1901; his pro-Irish speech before a committee of the Senate of the United States, 29 Aug. 1913; finally, in 1920, the Peace-Treaty plebiscite appeal delivered in New York City and his speech at the Democratic National Convention at San Francisco, nominating for the Presidency the Hon. Alfred E. Smith, now Governor of the State of New York. His earnest last speech in the House, 28 Feb. 1923, contained such words as these: "There is no way by which the Government can interfere in private business except to oppress it . . . Every attempt to enrich men by law means the despoiling of some for the benefit of others."

COCOA. See FOOD STANDARDS, FEDERAL.

COCOANUTS. According to statistics supplied by the National City Bank of New York the imports of cocoanuts and coconut products into the United States during 1922 had an estimated value of \$25,000,000. This represented over 1,000,000,000 cocoanuts, practically all of which were grown on islands under the American flag. The same authority estimates the value of the cocoanuts and coconut products imported into the United States since the beginning of the World War at \$300,000,000. Most

of the cocoanuts imported during 1922 came from the Philippine Islands. Tutuila, Guam, Hawaii, Porto Rico and the Virgin Islands contributed toward the total. Coconut and coconut products come to the United States in four distinct forms; first, the nut in its natural form; second, the shredded meat of the nut; third, a much more important article, "copra" (the broken and dried meat of the nut in convenient form for transformation into oil), and fourth, the oil itself, which forms 70 per cent of the meat of the coconut and which is now, according to the *Trade Record* of the National City Bank, turned out in enormous quantities by American factories in the Philippine Islands, where many millions of American dollars are invested in the coconut industry. Of 189,000,000 pounds of coconut oil imported in 1921 the Philippine Islands contributed 164,000,000 pounds. Importations of copra in 1921 totaled 190,000,000 pounds, nearly one-half of which came from the Philippines. Shredded coconut imported in 1921 totaled 35,000,000 pounds, most of which came from the Dutch East Indies. In 1921 about 100,000,000 cocoanuts in the natural state were imported into the United States, most of them coming from the Caribbean Islands, Porto Rico, British West Indies, Panama, Honduras and the other islands fronting on the Caribbean Sea and the Gulf of Mexico. At \$300,000,000, the value of the cocoanuts and coconut products imported into the United States since 1914 is approximately five times the value of such importations during the eight years prior to 1914.

COD-LIVER OIL, Manufacture of. See CHEMISTRY, subsection *Organic and Biological*.

CODDLING MOTH. See ENTOMOLOGY, UNITED STATES BUREAU OF.

CODRINGTON, Robert Henry, English missionary: b. Wroughton, Wilts, 15 Sept. 1830; d. September 1922. Educated at the Charterhouse and Wadham College, Oxford, he lived to be their oldest alumnus and oldest of the honorary fellows of Wadham, to which honor he was elected in 1855. He was ordained at Oxford and soon went to New Zealand. There he became connected with the teaching mission staff on Norfolk Island and thither came to him the children of all the chiefs from all the islands of the Archipelago. He wrote the grammars and vocabularies of 34 languages and also recorded the folk-lore of the Melanesians and translated the Bible into their tongue. Here he became known as the "Apostle of the Pacific" and "the great missionary teacher of Melanesia." When compelled in 1887 to leave the work to which he was so greatly attached in Melanesia, he returned to England and became vicar of Wadhurst and prebendary of Chichester. For 25 years he was lecturer at Chichester Theological College. Oxford gave him the honorary degree of D.D. He was a great traveler and had visited every continent. Many famous men were his intimate friends, including Cardinal Newman, Cardinal Manning, Samuel Wilberforce, Mr. Gladstone, "Lewis Carroll" (C. L. Dodgson), John Vebke and Wordsworth. Although reaching the age of 92, he remained young in spirit. Doctor Codrington was greatly

beloved, particularly by young people with whom he never failed to be in sympathy. It is said of him that "he was the soundest of scholars, kindest of teachers, most practical of saints, most genial and tolerant of friends." His publications include: 'The Melanesian Languages' (1885); 'The Melanesians' (1891), and 'Dictionary of the Mota Language' (1896).

COE COLLEGE, a Presbyterian co-educational institution founded in 1881 and located at Cedar Rapids, Iowa. In 1922-23 it had a faculty of 45 in the liberal arts department and 11 in the music department; a grand total of about 1,500 students; property valued at \$2,034,126.91 and an income of \$229,000. Harry Morehouse Gage, LL.D., is president.

COERNE, Louis Adolphe, American musician: b. Newark, N. J., 27 Feb. 1870; d. New London, Conn., 11 Sept. 1922. After receiving an education in German and French schools, he was graduated at the Boston Latin School in 1888, studied at Harvard in 1888-89 and took a Ph.D. in 1908. Then he studied harmony and composition under John K. Paine, violin under Franz Kneisel and organ and composition under Rheinberger at the Royal Academy of Music in Munich, where he was graduated with honors in 1893. Returning to this country, he became musical director of the Buffalo Liedertafel, and Buffalo Vocal Society, Church of the Messiah, in 1894-97; and in 1897-99 he was musical director Trinity Church and Arion Club Maennerchor, Columbus, Ohio. From 1889 to 1902 he composed and studied in Europe. In 1903 he was instructor of the music department, Harvard summer session, and in 1903-04 he was associate professor of music at Smith College. From 1905 to 1907 he was engaged in research work in Harvard and New York and in composing and publishing in Germany and Denmark. In 1907-09 he was musical director at Troy, N. Y.; in 1909-10, director Conservatory of Music, Olivet College; in 1910-15, director School of Music and professor of the history and science of music in the University of Wisconsin, Madison, Wis., and from 1915 until his death, professor of music in the Connecticut State College for Women, New London. He was organist and choirmaster of the First Congregational Church, Madison, Wis., and honorary musical director of the Madison Maennerchor. He was a member of many societies, fraternities and clubs, including the Saint Nicholas (New York); Cliff Dwellers (Chicago); Harvard Musical Society; International Musical Society, and the University Club, New York City. His 'Evolution of Modern Orchestration' (1908), was accepted as a thesis by Harvard for Ph.D. He composed nearly 200 compositions of various kinds. His opera, 'Zenobia,' op. 66, was performed in Bremen in 1905-06, the first performance in Europe of an opera written by a native of the United States. Excerpts from the opera were played by the Minneapolis Symphony Orchestra in 1914, by the Chicago Symphony Orchestra and the Saint Louis Symphony Orchestra in 1915. His other compositions include: 'Hiawatha,' symphonic poem, op. 18, performed in Munich in 1883 and by the Boston Symphony Orchestra in 1894; 'Jubilee March,' op. 20, written for massed

band performances at the Chicago Exposition of 1893; 'A Woman of Marblehead,' opera, op. 40; 'Beloved America,' patriotic hymn for male voices and orchestra, op. 41; Mass in D-minor, op. 53; 'Swedish Sonata,' for violin and piano, op. 60; 'Sakuntala,' melodrama, op. 67, performed at Smith College in 1904 and at Albany in 1914; 'Dedication Ode' for orchestra, op. 82, written for and performed at the first opening exercises of Connecticut State College for Women in 1915; and he completed Rheinberger's Mass in A-minor.

COFFEE. The New York Coffee and Sugar Exchange, which makes regular reports of coffee statistics, estimated the world's crop of 1921-22 at 19,820,000 bags, of which 8,188,000 was Santos and 3,695,000 Rio. The United States took 8,946,524 bags of this, the total of which Brazil furnished 5,747,496. Europe took 9,077,591 bags. The visible supply of coffee in January 1922 was 9,262,824 bags, and at the close of the year the supply was estimated by Minford, Lueder & Co. as 8,460,550 bags. It is believed that the coming 1922-23 crop in Brazil will be unusually large, and, therefore, the tendency of prices of coffee is downward. Quotations on the New York Exchange at the close of 1922 ranged from 10.40 to 14¼ cents per pound. The highest Rio quotation for the year was in May—11¼ cents. There were no new developments in the valorization policies during the year, neither the stocks nor the policy being reported. The total world's crops of coffee, in bags of 132 pounds, for the last 10 years, beginning in 1913, are as follows: 16,373,000, 19,612,000, 17,886,000, 19,756,000, 16,691,000, 18,847,000, 13,640,000, 15,163,000, 20,283,000, 19,820,000. The United States imported during 1921, 1,340,980,000 pounds of coffee, of a value of \$142,809,000. Forty-five per cent of this came from Brazil, 13 per cent from Colombia, 8.5 from Central America, and a little from Venezuela and Mexico. During the first nine months of 1922 the importations fell off about 12 per cent in quantity, but increased 8 per cent in price. Brazil, Venezuela and Mexico, however, all shipped in increasing quantity. About 5 per cent of the importation of coffee into the United States is re-exported, some of it in the form of roasted or prepared coffee.

Consumption.—The per capita consumption of coffee in the United States for the last three years averaged 12 pounds as against 10 pounds in 1900. The wholesale value is about 12 cents a pound, although it reached the peak of 21.9 cents in 1920. About half the world's supply comes from Brazil, and we are the largest consumers, being followed by France, Holland, Great Britain and Italy in the order named. In normal years we take 42 per cent of the Brazilian crop. It is commonly called Santos coffee, from the port of shipment, and 90 per cent of it is grown in the State of Sao Paulo. Statistics of production are usually figured to 30 June of each year, thus covering the annual crop. The 1921-22 crop of Santos was officially estimated by the Department of Agriculture of Sao Paulo as 7,990,000 bags of 132 pounds. Brazil shipped out 791,534,172 pounds of coffee during the first half of 1922 of a

value of \$87,089,747, this being entirely from the 1921 crop; the 1922 crop did not begin moving until 1 September. The coffee beetle has been a great pest in the coffee fields of Africa and the East Indies, but Java growers report a discovery that is expected to greatly reduce such losses in the future. From refiners of coffee comes a report that a new method of cleaning raw coffee has been found that does not at all reduce the aroma or quality of the berries.

COFFIN FOUNDATION. See CHARLES A. COFFIN FOUNDATION.

COINS, Foreign, Values of. On page 202 will be found a table compiled by the Director of the Mint which shows the values of pure metal contents of foreign coins as proclaimed for the beginning of 1923 by Secretary Mellon of the Treasury.

COIT, James Milnor, American educator: b. Harrisburg, Pa., 31 Jan. 1845; d. Munich, Germany, 5 Jan. 1922. He received his preliminary education at Saint Paul's School, Concord, N. H., and in 1865 was graduated from Hobart College with the degree of A.B. He took the degree of A.M. at the same institution in 1868. Dartmouth College conferred the degree of Ph.D. upon him in 1881 and Hobart College the degree of Sc.D. in 1905. From 1873-75 he was manager of the Cleveland Tube Works and in 1876 he became master in natural sciences at Saint Paul's School. He was vice-rector and acting rector of the same institution, 1904-06. In 1909 he engaged in research work at the University of Munich and thereafter established in Munich the Coit School for American Boys, of which he was headmaster. He was a Fellow of the American Association for the Advancement of Science; member of the American Chemical Society and the American Social Science Association; associate member, National Institute of Arts and Letters, and various historical and patriotic societies. He wrote 'Manual of Chemical Arithmetic with a Short System of Qualitative Analysis' (1886, 1895); 'Treatise on the X-Rays and Their Relation to Medical and Surgical Sciences' (1897); 'Liquid Air' (1899).

COKE. See COAL.

COKER COLLEGE, a Baptist educational institution for women, founded in 1908 and located at Hartsville, S. C. In 1922-23 it had a faculty of 23 members, 216 students, property valued at \$750,000 and an income of \$90,000. E. W. Sikes, M.A., Ph.D., is president.

COLBY COLLEGE, a Baptist co-educational institution, founded in 1818 and located at Waterville, Me. In 1922-23 the faculty numbered 30, the student body 500. The college property was valued at \$2,000,000 and its income was \$175,000. Arthur J. Roberts, M.A., LL.D., is president.

COLD STORAGE. While the stocks of creamery butter and eggs held in cold storage in the United States on 1 Jan. 1923 were markedly less than the stocks so held on 1 Jan. 1922, stocks of frozen beef, poultry and pork showed equally marked increases, according to the Department of Agriculture. Stocks of creamery butter in cold storage on 1 Jan. 1923 were un-

VALUES OF FOREIGN COINS.

Country	Legal standard	Monetary unit	Value in terms of U. S. money	Remarks
Argentine Republic	Gold	Peso	\$0.9648	Currency: Paper, normally convertible at 44 per cent of face value; now inconvertible.
Austria	Gold	Krone	.2026	
Belgium	Gold and silver	Franc	.1930	Member Latin Union; gold is actual standard.
Bolivia	Gold	Boliviano	.3893	121 bolivianos equal 1 pound sterling.
Brazil	Gold	Milreis	.5462	Currency: Government paper normally convertible at 16 pence (= \$0.3244) per milreis.
British Colonies in Australasia and Africa.	Gold	Pound sterling	4.8665	
British Honduras	Gold	Dollar	1.0000	
Bulgaria	Gold	Lev	.1930	
Canada	Gold	Dollar	1.0000	
Chile	Gold	Peso	.3650	Currency: Inconvertible paper.
		Amoy	.7832	
		Canton	.7808	
		Cheefoo	.7491	
		Haikwan (customs)	.7969	The tael is a unit of weight; not a coin. The customs unit is the Haikwan tael. The values of other taels are based on their relation to the value of the Haikwan tael.
		Hankow	.7328	
		Kiaochow	.7589	
		Nankin	.7750	
		Niuchwang	.7345	
		Ningpo	.7530	
		Peking	.7635	
		Shanghai	.7154	
		Tientsin	.7589	
		Yuan	.5075	
		Hongkong	.5151	
		British	.5151	
		Mexican	.5189	
China	Silver	Tael		The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic; it is equivalent to .644 + of the Haikwan tael.
		Dollar		
		Yuan	.5075	
		Hongkong	.5151	
		British	.5151	
		Mexican	.5189	
				Mexican silver pesos issued under Mexican decree of Nov. 13, 1918, are of silver content approximately 41% less than the dollar here quoted; and those issued under decree of Oct. 27, 1919, contain about 51% less silver.
Colombia	Gold	Peso	.9733	Currency: Government paper and gold.
Costa Rica	Gold	Colon	.4653	
Cuba	Gold	Peso	1.0000	
Denmark	Gold	Krone	.2680	
Ecuador	Gold	Sucre	.4867	
Egypt	Gold	Pound (100 piasters)	4.9431	The actual standard in Egypt is the British pound sterling, which is legal tender for 97½ piasters.
Finland	Gold	Markka	.1930	Member Latin Union; gold is actual standard.
France	Gold and silver	Franc	.1930	
Germany	Gold	Mark	.2382	
Great Britain	Gold	Pound sterling	4.8665	
Greece	Gold and silver	Drachma	.1930	Member Latin Union; gold is actual standard.
Guatemala	Silver	Peso	.4777	Currency: Inconvertible paper.
Haiti	Gold	Gourde	.2000	Currency: Inconvertible paper.
Honduras	Silver	Peso	.4777	Currency: bank notes.
India [British]	Gold and Silver	Mohur and sovereign	4.8665	The British sovereign and half sovereign are legal tender in India at 10 rupees per sovereign.
		Rupee	.2270	
Indo-China	Silver	Piaster	.5159	
Italy	Gold	Lira	.1930	Member Latin Union; gold is actual standard.
Japan	Gold	Yen	.4985	
Liberia	Gold	Dollar	1.0000	Currency: Depreciated silver token coins. Customs duties are collected in gold.
Mexico	Gold	Peso	.4985	
Netherlands	Gold	Guilder (florin)	.4020	
Newfoundland	Gold	Dollar	1.0000	
Nicaragua	Gold	Cordoba	1.0000	
Norway	Gold	Krone	.2680	
Panama	Gold	Balboa	1.0000	
Paraguay	Gold	Peso (Argentine)	.9648	Currency: Depreciated Paraguayan paper currency.
Persia	Silver	Kran	.0880	Currency: Silver circulating above its metallic value. Gold coin is a commodity only, normally worth double the silver.
Peru	Gold	Libra	4.8665	
Philippine Islands	Gold	Peso	.5000	
Portugal	Gold	Escudo	1.0805	Currency: Inconvertible paper.
Rumania	Gold	Leu	.1930	
Russia	Gold	Ruble	.5146	
Salvador	Gold	Colon	.5000	
Santo Domingo	Gold	Dollar	1.0000	
Serbia	Gold	Dinar	.1930	
Siam	Gold	Tical	.3709	
Spain	Gold and silver	Peseta	.1930	Valuation is for gold peseta; currency is notes of the bank of Spain.
Straits Settlements	Gold	Dollar	.5678	
Sweden	Gold	Krona	.2680	
Switzerland	Gold	Franc	.1930	Member Latin Union; gold is actual standard.
Turkey	Gold	Piaster	.0440	(100 piasters equal to the Turkish £.)
Uruguay	Gold	Peso	1.0342	Currency: Inconvertible paper.
Venezuela	Gold	Bolivar	.1930	

usually low, amounting to 26,941,000 pounds, compared with the five-year average stocks for that date of 51,093,000 pounds said *Weather Crops and Markets*, the official publication of the Department of Agriculture, in giving the details. The decrease during December amounted to 20,832,000 pounds, or 44 per cent of the holdings on 1 December. Holdings of packing stock butter also continued low, being approximately one-third of the five-year average holdings on 1 January. Stocks of case eggs on 1 January were 1,310,000 cases compared with 889,000 cases on 1 Jan. 1922, and the five-year average holdings of 976,000 cases. The decrease in stocks during December amounted to 1,947,000 cases, or 60 per cent of the 1 December holdings. Stocks of American cheese on 1 January amounted to 33,659,000 pounds, a slight decrease compared with the 37,291,000 pounds on hand 1 Dec. 1922, and the five-year average for 1 January of 40,316,000 pounds. Apple holdings stayed at practically the same figure as was reported for 1 December, the holdings on 1 January being 6,376,000 barrels, and for 1 Dec. 1922, 6,743,000 barrels. The holdings on 1 Jan. 1922 amounted to 5,429,000 barrels, and the five-year average holdings for that date were 5,247,000 barrels. Stocks of frozen poultry almost doubled during December, the holdings on 1 January being 100,122,000 pounds, compared with 51,781,000 pounds on 1 December. The five-year average holdings for 1 January are 88,703,000 pounds. Stocks of frozen beef on 1 January were considerably heavier than a year ago, being 91,820,000 pounds, compared with 68,495,000 pounds on 1 Jan. 1922. These holdings, however, are still below normal, the five-year average for 1 January being 212,988,000 pounds. Total pork stocks on 1 January amounted to 567,312,000 pounds, an amount considerably heavier than a year ago and slightly larger than the five-year average holdings of 566,574,000 pounds. Frozen pork holdings alone amounted to 72,214,000 pounds on 1 January, compared with 51,203,000 pounds on 1 Jan. 1922, and the five-year average of 60,789,000 pounds. Total holdings of all meats showed a gain during December of approximately 182,500,000 pounds, the total holdings on 1 January being 751,601,000 pounds. The lard holdings on 1 January were 47,705,000 pounds, compared with 47,541,000 pounds one year ago, and the five-year average holdings on 1 January of 65,657,000 pounds.

COLGATE UNIVERSITY, a non-sectarian educational institution for men, founded in 1819 and located at Hamilton, N. Y. In 1922-23 it had a faculty of 54 members, 725 students, property valued at \$1,487,256 and an income of \$277,523.42. George B. Cutten is president.

COLLEGES AND UNIVERSITIES. See articles on individual colleges and universities.

COLLINS, Michael, Irish Sinn Fein leader, member of the Provisional Government of the Irish Free State and commander-in-chief of the National Army: b. County Cork, Ireland, in 1880; d. near Bandon, County Cork, 22 Aug. 1922. His people were small farmers. He went to the school at Clonakilty, and about the age of 16 joined his sister, who was at work in the post office in London, and got a position as

sorter there. A little later he went to work for the Guaranty Trust Company's London branch, and learned something about finance, which later he used to great advantage. About this time he and 200 London Irishmen used to drill secretly at Wormwood Scrubs, a suburb of London. In 1915, at the age of 35, he went to Dublin, worked as an accountant and later as secretary to the Sinn Fein. In 1916 he fought in the rebellion as an inconspicuous soldier and was deported to Wandsworth prison and later to Frongoch internment camp. The rise of Michael Collins as an important figure in the Sinn Fein began in 1916 and in the election of 1918, when he became a member of the Dail Eireann from his home district of South Cork. He acted as secretary to a special Sinn Fein convention after amnesty was granted and in December 1918 was elected member of Parliament from South Cork, but in accord with Sinn Fein policy did not take his seat. By sheer force of character and ability he developed rapidly from 1918, serving eventually as Minister of Finance to the Sinn Fein Government; and when the Anglo-Irish treaty was negotiated it was Michael Collins who made the greatest impression in Downing Street. During the conference on the treaty in London he won the esteem of Lloyd George, Winston Churchill and Lord Birkenhead. Since 1915, Collins lived the life of a fighting man and was engaged until the close of his life in a tremendous struggle with the Republicans on one side and Northeast Ulster on the other. With the late Arthur Griffith he headed the Irish Provisional Government and served as commander-in-chief of the Free State, or National, Army. He was intensely brave and walked in the funeral procession of his co-worker, Arthur Griffith, who died on 12 Aug. 1922, although his life had been threatened. He fell a victim to the Irregulars, who wished to remove this strong figure and also because of reprisals against the shooting of Henry J. Boland by the Free State soldiers.

In the formative period of the new Irish government Mr. Collins' financial ability was conspicuous. He secured a loan from the Bank of Ireland with which he managed to tide over the Free State Government until order had been restored throughout the country and the regular collection of revenue resumed. Collins' relations with the Belfast Government were cordial and it was largely through him that the boycott against Ulster products was removed. His policy toward the Republican malcontents was one of conciliation. Its futility was proved by his own death at the hands of these extremists, but the lesson was learned and Collins' successors inaugurated a sterner policy toward the opponents of the Free State. It was largely under Collins' supervision that the new Irish constitution was drafted in such manner as to secure the economic independence of the Irish nation while observing the Anglo-Irish Treaty of 1921, both in the spirit and the letter.

General Collins died fighting, receiving a fatal wound in the head after the attacking party had been practically driven off. He had been carrying out an inspection of the National troops outposts in Southern Cork. He lost his life in the wild country that lies between Macroom and Bandon. A few days previously he

had left Dublin to visit the front in West Cork. In Cork city the inhabitants went wild with enthusiasm when he arrived. With a small party he set forth to make the tour of inspection. Meanwhile the Irregulars had formed their plans. Accompanied by members of the headquarters staff, General Collins left Cork at six o'clock on Tuesday morning, 22 August, to inspect military positions in South Cork, escorted by a light armored car and a lorry containing soldiers. The party numbering about 20, visited nearly all the posts in South Cork occupied by the National Army, including Skibbereen, Rossbarbery and Clonakilty. Towards evening the party decided to take a round-about route to Cork from Bandon. While traveling in the wild, rugged and hilly district, away from the main roads on the south side of the river Lee, the party was attacked about half-past six o'clock by 200 Irregulars without any warning. At the first fire General Collins ordered his men to take cover at the fences on both sides of the road. In a few moments the attack developed into a regular fight which lasted nearly an hour. In the last stages of the encounter, during which several Irregulars had been killed, General Collins received his fatal wound. Although mortally wounded, he still fired from the ground on which he had fallen and encouraged his men by his unflinching bravery. In a feeble voice he asked for Major-General Dalton and General Sean O'Connell; they whispered a few prayers and recited the act of contrition before the general died. His last words were "Forgive them." Collins was a dashing, handsome man, very dark, with piercing black eyes. He was a skilled automobilist and "could ride over a five-barred gate or take a Galway stone wall"—so people say. He was a great favorite in his native country and was engaged to marry Miss Kittie Kiernan of Granard, County Longford. Former Governor Martin H. Glynn thus characterizes him: "Michael Collins was a man of dash and snap, of intense convictions and determined action. He had many of the characteristics of Theodore Roosevelt. He was intensely beloved by the people of Ireland and his slayers will arouse a resentment which will come home to plague them. The men responsible for the slaying of Collins are playing into the hands of Ireland's enemies, murdering Ireland's chances to take her place among the nations of the world and are creating an excuse for England once again to assert dominion over the Emerald Isle."

COLOMBIA, a republic of South America, situated to the east of Panama and fronting on the Pacific Ocean and on the Caribbean Sea. On the land side it touches Venezuela to the east and Brazil and Ecuador to the south. In the south there is a small territory claimed by Peru. The capital is Bogota. The President to 7 Aug. 1922 was Gen. Jorge Holguin. On that day Gen. Pedro Nel Ospina was inaugurated for a term of four years.

Area, Population, Etc.—The republic has an area of 440,846 square miles with a coast line of approximately 3,100 miles about equally divided between the Pacific and the Caribbean Sea. It is divided into 14 departments, three territories or intendencias and six comisarias or

special districts. These with their capitals and populations are as follows:

POLITICAL DIVISIONS	Capital	Area, square miles	Population (census of 14 Oct. 1918)
Departments			
Antioquia	Medellin	22,752	823,226
Atlantico	Barranquilla	1,008	135,792
Bolivar	Cartagena	22,320	457,111
Boyaca	Tunja	16,460	657,167
Caldas	Manizales	7,380	428,137
Cauca	Popayan	20,403	238,779
Cundinamarca	Bogota	8,046	812,036
Huila	Neiva	8,100	183,337
Magdalena	Santa Marta	19,080	211,395
Narino	Pasto	9,360	340,765
Santander N.	Cucuta	6,255	239,235
Santander S.	Bucaramanga	17,865	439,161
Tolima	Ibague	10,080	328,812
Valle	Cali	3,897	271,633
Intendencias			
Choco	Quibdo	68,127	91,383
Meta	Villavicencio		34,071
Providencia	San Andres		5,953
Comisarias			
Arauca	Arauca		7,510
Caqueta	Florencia		74,254
Goajira	San Antonio		22,652
Putumayo	Mocoa		40,770
Vaupes	Calamar		6,355
Vichada	Vichada		5,540
Total		440,846	5,855,077

The territory of the present Republic of Panama formed a department of Colombia until it declared its independence on 4 Dec. 1903. It was not, however, until 6 April 1914 that Colombia by treaty with the United States agreed to recognize the independence of Panama and to receive therefor \$25,000,000 and certain rights and privileges in the Canal Zone. This treaty was ratified by the Senate of the United States on 20 April 1921 and by the Colombian Congress on 24 Dec. 1921.

The capital, Bogota, lies at an elevation of 8,500 feet above the level of the sea. It had a population of 160,000 in 1922. Other large cities are: Barranquilla (64,543); Cartagena (51,382); Medellin (19,146); Cali (45,825); Manizales (43,203).

Education.—There are in the republic 5,317 primary schools with 337,315 pupils, 73 secondary schools with 7,305 pupils, 28 professional schools with 2,768 pupils, 27 normal schools with 1,231 students and 34 art and special schools with 1,606 students. For higher education there are universities at Bogota (founded 1572), Cartagena, Medellin, Popayan and Pasto. The aggregate attendance at the universities in 1922 was about 2,500. The Salesian Fathers conduct several trade and vocational schools and the secondary schools are nearly all conducted by religious orders of the Catholic Church and receive state aid. Primary education is free but there are no compulsory attendance laws. The average annual expenditure of the state on education is \$1,300,000.

Religion.—Roman Catholicism is the prevailing faith of the people. This church is organized under four archbishops and 10 bishops, one of the latter having ecclesiastical jurisdiction in the Republic of Panama. Other denomi-

nations are permitted provided their doctrines do not conflict with the generally accepted views relating to Christian morals and with the law.

Production.—The coast and hot regions of the republic produce corn, sugar, sea-island cotton, rubber, cacao, bananas, fibres, tropical fruits and vegetables, while the mountains and uplands yield coffee, apples, pears, peaches, berries, potatoes, wheat, barley and other products of the temperate zone. The entire country is suitable for stock raising, the pastures in many sections remaining green the year round. Only a fraction of the country is under cultivation at present and development is slow because of the lack of means of transport. The Santa Marta district is the centre of the banana cultivation which has increased in recent years. Coffee is the chief crop, the exports of which in 1920 rose to 1,443,663 bags of 60 kilos or 132 pounds, valued at 36,328,335 pesos. The gathering of ivory nuts, the fruit of the tagua palm, from which the higher grades of buttons are made, is one of the growing industries of the country. The exports of tagua have reached as high as 6,000,000 kilos in a recent year in which their value was \$390,000. Cotton planting is on the increase, the yearly production being at present about 3,000,000 pounds. About 25,000 acres are planted to cotton. Tobacco is also grown in greater quantity every year. The rubber tree is indigenous and its cultivation has begun. There are valuable timber lands but very little reaches the export market.

In some departments, notably Antioquia, the mineral industry is well established, while the Marmato and Sucio River gold deposits are said to be equal to those of the Transvaal. Gold is found in all departments, there being over 17,000 mines worked. Copper, lead, mercury, manganese and platinum are also worked. Colombia is the greatest producer of emeralds and the second of platinum. The emerald mines are leased by the Government to private operators. The output is said to be valued at 1,000,000 pesos yearly.

There are salt mines north of Bogota which are the property of the Government. Coal is found in several sections of the country but the quantity mined has been very small. Within recent years there has been a great deal of interest in the oil fields of Colombia. Although the production of oil has been comparatively small the development work so far accomplished would indicate large quantities and of a high grade. Several refineries have been established.

The principal manufacturing industries are those for the making of cotton textiles, glass, earthenware, matches, hats, flour and sugar. The manufacture of "Panama" hats has grown to large proportions of late years. Most of the product of this industry is exported to the United States. The last industrial census showed 121 factories in the republic with an investment of \$12,500,000.

Commerce and Trade.—The external trade of the country in 1920 amounted to \$150,000,000, of which the imports represented \$90,000,000. The great bulk of the foreign trade is with the United States and the United Kingdom. Coffee, hides, bananas, gold, silver and platinum were the chief articles of export. The principal imports are foods, drugs, metals and ma-

chinery and cotton textiles. In 1921 and 1922 the external trade suffered from the general world depression and while the quantities of goods exported were considerably less than in 1920 the prices were still proportionately lower.

Finance.—The revenue for the fiscal year 1921-22 contemplated receipts aggregating 27,495,000 gold pesos and disbursements of 33,256,109 gold pesos. The external debt of the republic in 1922 amounted to 20,000,000 dollars and the internal consolidated debt to 2,848,260 gold pesos and the floating debt to 11,104,428 gold pesos.

Communications.—There are 891 miles of railways in the country. About one-half of this mileage is of metre gauge, the other half of three-foot gauge. The inland traffic is mostly by the waterways. The Magdalena River is navigable for over 950 miles and its tributary streams add 215 miles more. The roads are not very good except in the vicinity of the larger cities, but the Government is gradually extending these into the interior. There are 853 postoffices, 13,640 miles of telegraph lines.

Army.—There is a compulsory military service law. The peace strength of the army is 6,000 men and the war strength about 50,000, since every fit citizen is liable to service in war-time. There is no naval establishment.

Government.—The President is elected by direct vote of the people for a term of four years and is not eligible for re-election until four years have elapsed. There is no Vice-President, but two designados, first and second, elected annually by the Congress, succeed the President, respectively, in case of his absence, death or inability to serve. The legislative power rests in a Congress of two chambers. The Senate has 34 members, elected indirectly by the people. There are 92 members in the Lower Chamber, elected by direct popular vote. The President is assisted by eight ministers with the usual portfolios.

History.—On 24 Dec. 1921 the Colombian House approved the treaty with the United States on the Panama settlement and under the terms of which Colombia is to receive \$25,000,000, payable in five installments, as compensation for her territorial losses when the Republic of Panama was made independent. The first payment under the treaty was made by the United States on 6 Dec. 1922. Under the treaty the remaining payments will be made yearly in sums of \$5,000,000. The presidential elections were held on 12 February and the Conservative candidate, Pedro Nel Ospina, secured a majority over the Liberal candidate, Benjamin Herrera. It was the first time in 37 years that the Liberal party took part in an election, they having hitherto held aloof because of the alleged lack of guarantees. The election was held because of the resignation of President Marco Fidel Suarez in November 1921 caused by the opposition of the Congress to his policies. Jorge Holguin succeeded Suarez as provisional president and held office until the president-elect assumed office in August. During the summer months the president-elect visited the United States where he was made the recipient of many honors both official and private. The Department of El Valle defaulted in the payment of interest on the debt contracted for the improvement of the port of

Buenaventura. The creditors asked for the proceeds of liquor and tobacco taxes according to the stipulation of the loan. During the year there was some discussion as to the advisability of re-establishing the death penalty abolished by law in 1910. The Conservatives pointed out the crime wave of the past decade as the greatest in the history of the country. The Japanese government sent a complete exhibit of native Japanese products to Bogota with the purpose of furthering the trade in Japanese products and manufactures in Colombia.

The government offered the whole of the \$25,000,000 to be paid by the United States as part guaranty for a loan of 80,000,000 pesos from Blair and Company of New York, also offering in mortgage the railways to be constructed with the money. The city of Medellin approved a loan for \$20,000,000 negotiated with New York for furthering sanitation work and other public works in that municipality. In September, the American Consul at Barranquilla reported a continued business revival with a return to approximate normalcy expected by the close of the year 1922. Exports of Colombia's most important raw products were gradually increasing while the banks were extending credit cautiously. This careful financing, together with continued improvement in commercial conditions, was rapidly leading to economic stability as the year closed.

COLOMBIA-AMERICAN TREATY.

See PEACE AND ARBITRATION, INTERNATIONAL.

COLORADO, a mountain State of the United States, bounded on the north by Wyoming and Nebraska, on the east by Nebraska and Kansas, on the south by New Mexico and on the west by Utah. It has an area of 103,948 square miles, which gives it seventh place among the States in area. It has a population of 939,629, which gives it thirty-third place among the States of the Union in population. Of the total population in 1920, 11,318 were negroes, 1,385 Indians and 291 Chinese. The foreign-born population the same year numbered 116,954, including 9,584 English, 6,191 Irish, 11,992 German, 10,112 Swedish, 7,261 Canadian and 3,357 Scottish. Denver, the capital and chief city of the State, had a population in 1920 of 256,491. The other principal cities are Pueblo, 43,050; Colorado Springs, 30,105; Boulder, 11,006, and Trinidad, 10,906.

Religion.—The chief religious denominations in the order of their relative strength are Roman Catholics, Methodists, Presbyterians, Baptists and Congregationalists.

Education.—There are in the State 2,938 primary schools and 262 high schools with 8,647 teachers and an enrollment of 224,289 pupils. About \$18,000,000 is spent annually on the public schools. For higher education there are several colleges, including Colorado College, which had 600 students in 1922-23; the University of Colorado at Boulder, which had 2,320 students in 1922-23; the University of Denver, with 3,500 students in 1922-23, and the Chamberlin Observatory. In addition to these institutions, there are also agricultural colleges, normal schools and a school of mines.

Agriculture.—The soil of the State varies from the most arid to the most productive.

Irrigation is practised extensively and has made agriculture the first industry of the State, taking the lead over mining and livestock raising. The chief crops, with their acreage, yield and value, for the year 1922 were: corn, 1,145,000 acres, 18,320,000 bushels, \$12,091,000; spring wheat, 358,000 acres, 5,370,000 bushels, \$4,779,000; winter wheat, 1,262,000 acres, 16,406,000 bushels, \$14,601,000; barley, 186,000 acres, 3,534,000 bushels, \$2,085,000; oats, 185,000 acres, 4,625,000 bushels, \$2,081,000; rye, 97,000 acres, 873,000 bushels, \$576,000; broom corn, 10,000 acres, 18,000 tons, \$351,000; tame hay, 1,239,000 acres, 2,354,000 tons, \$26,365,000; beans, 81,000 acres, 405,000 bushels, \$1,782,000; potatoes, 142,000 acres, 18,460,000 bushels, \$6,830,000; apples, 4,250,000 bushels; peaches, 1,160,000 bushels; pears, 519,000 bushels, and grain sorghum, 247,000 acres, 3,705,000 bushels, \$2,594,000. On 1 Jan. 1923 there were in the State 425,000 horses, valued at \$19,550,000; 33,000 mules, valued at \$1,980,000; 253,000 milk cows, valued at \$13,409,000; 1,361,000 other cattle, valued at \$34,569,000; 2,444,000 sheep, valued at \$18,574,000, and 523,000 hogs, valued at \$5,492,000. The State has 40,748,943 acres of forests.

Mining.—Colorado produces about 10,000,000 tons of coal yearly. Colorado mines in 1922 produced, according to the United States geological survey, \$6,500,000 in gold; 6,000,000 ounces of silver, 22,000,000 pounds of lead, 3,600,000 pounds of copper, and 24,000,000 pounds of zinc, as compared with \$6,835,328 in gold, 5,631,657 ounces of silver, 19,660,466 pounds of lead, 4,153,442 pounds of copper, and 2,360,000 pounds of zinc in 1921. Average prices in 1922 were \$1 for silver, \$0.134 for copper, \$0.057 for lead, \$0.057 for zinc, as compared with \$1 for silver, \$0.129 for copper, \$0.045 for lead, and \$0.05 for zinc in 1921. The situation in the Colorado metal-mining industry during the first half of 1922 was disappointing, but there was a marked improvement as the year drew to a close, particularly when the November prices for lead and zinc warranted hope for stability of market. There was also increased interest by capitalists in investigation of the industry.

Manufactures.—According to the latest manufacturing census of the United States, \$243,827,000 are invested in manufacturing industries in the State of Colorado. There are 2,631 establishments, employing 35,256 hands. The value of all manufactures in 1920 was \$275,391,000. The chief industries are those connected with the smelting and refining of metals, iron, lead, copper and zinc.

Railways, Roads, Etc.—The State has 5,519 miles of railroads. The tourist travel is heavy, particularly during the summer months. Great improvement has been effected in recent years in the State highways, many of which are links in great transcontinental routes.

Government.—The executive power is vested in a Governor, elected for two years. The legislative power is vested in the General Assembly, consisting of a Senate of 35 members, elected for four years, and a House of Representatives of 65 members, elected for two years. Sessions of the legislature are held bi-

ennially. The Governor in 1922 was the Hon. Oliver H. Shoup, and the Secretary of State was the Hon. Carl S. Milliken. Governor Shoup was succeeded in January 1923 by the Hon. William E. Sweet, whose term expires in January 1925. Colorado sends two senators and four representatives to the Federal Congress at Washington.

COLORADO AGRICULTURAL COLLEGE, a State co-educational institution, founded in 1879 and located at Fort Collins, Colo. In 1922-23 it had a faculty of 90 members (number of students not given), property valued at \$1,250,000 and an income, for teaching purposes only, of \$425,000. Charles A. Lory, D.Sc., is president.

COLORADO COLLEGE, a co-educational institution, founded in 1874 and located at Colorado Springs, Colo. It is non-sectarian, but of Congregational affiliation. In 1922-23 it had a faculty of 50 members, 600 students, property valued at \$3,000,000 and an income of \$245,000. Clyde A. Duniway, Ph.D., LL.D., is president.

COLORADO SCHOOL OF MINES, a State institution, founded in 1870 and located at Golden, Colo. Though intended for men, women may be admitted. In 1922-23 it had a faculty of 35 members, 535 students, property valued at \$919,036.44 and an income of \$258,791.04. Victor C. Alderson, LL.D., is president.

COLORADO, University of, a State co-educational institution, founded in 1874 and located at Boulder, Colo. In 1922-23 it had a faculty of 231 members, 2,320 students, property valued at \$3,500,000 and an income of \$1,250,000. George Norlin, Ph.D., is president.

COLORADO WOMAN'S COLLEGE, an educational institution, under Baptist control but non-sectarian, founded in 1890 and located at Denver, Colo. In 1922-23 it had a faculty of 15 members, 125 students, property valued at \$199,619.05 and an income of \$40,620.65. John William Bailey, Ph.D., is president.

COLORED METHODISTS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

COLOSTRUM. See MEDICINE AND SURGERY, ADVANCEMENT OF.

COLUMBIA COLLEGE, a Catholic educational institution for men, founded in 1873 and located at Dubuque, Iowa. Statistics for 1922-23 show a faculty of 33 members, 630 students, property valued at \$1,000,000 and income totaling \$300,000. Very Rev. E. D. Howard, A.M., is president.

COLUMBIA INSTITUTION FOR THE DEAF, a non-sectarian co-educational institution founded in 1857 and located at Washington, D. C. Gallaudet College, founded in 1864 is the advanced department of the Columbia Institution for the Deaf. In 1922-23 the Institution had a faculty of 19 members, 132 students, property valued at \$1,000,000 and an estimated income of \$134,500. Percival Hall, Litt.D., is president.

COLUMBIA UNIVERSITY, a non-sectarian co-educational institution, founded in 1754 and located at New York, N. Y. In

1922-23 it had a total teaching staff of 1,647 members while the number of students enrolled for the winter session was 17,387. The University's assets totaled \$61,396,782.24. Income for 1922-23 not given but for year ending 30 June 1922 it was \$5,510,481.96. Nicholas Murray Butler, LL.D., Litt.D., Hon.D., is president.

COMETS. See ASTRONOMY.

COMMERCE AND INDUSTRY. See under United States and articles on the several countries.

COMMERCE, International Chamber of. See PEACE AND ARBITRATION, INTERNATIONAL.

COMMERCE, World. See WORLD INTERNATIONAL TRADE.

COMMODITY COUNCILS. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

COMMUNISM. While the Communist regime of Lenin and Trotzky is still firmly in Soviet Russia, there are three notable indications that Communism, as a world-wide revolutionary movement was brought to a perceptible halt during 1922. First, there is the "New Economic Policy of Soviet Russia," which, in Lenin's own words, "now includes more elements of the old (Capitalistic) economic system than has hitherto been the case." This conservative development includes a reversion from the land policy of strict socialization to the plan of peasant possession, peasants being allowed to acquire actual possession, though technically ownership remains with the State. As a result of this concession to the peasantry, Lenin was able to declare, when he appeared 13 Nov. 1922, before the Fourth Congress of the Communist International in Moscow, that "from this quarter there need be no more fear of insurrections; we may affirm that it is henceforth out of the question that the peasants should rise against us, for they have no longer any ground for serious discontent."

According to Lenin's report and those of more disinterested observers, an era of general prosperity has just begun for small industry, and the working masses are witnessing an appreciable improvement in their condition. However, the improvement realized in major industries is rather slight. This is attributed to the persistent withholding of credit to Soviet Russia. The concessions granted to foreign capital, which up to the present have had only a relative importance, have never enabled Soviet Russia to effect economies in the expenditures necessitated by the reconstruction of her major industries. According to Lenin, the reversion to State capitalism in Russia has taken on special forms: land, major industry and commerce are in the hands of the proletarian State. Only medium enterprises have been leased out.

The second important commentary on the failure of Communist propaganda to make any appreciable progress is the Communist cry for a united proletarian front; the earlier policy of the Third or Communist International had been to split up the Socialist and trade-union movements of the world and to expel the moderates from the organizations. The result of such practices was to render the revolutionary movements helpless. With the exception of England, Australia and Russia, there is no

country, perhaps, in which radical activity is as fruitful of results to-day as in pre-war days. Realizing that the success of Communism depends upon world-revolt, Communist leaders are now urging a united front upon the part of the various factions in the labor movement against "the common enemy," the capitalist class. This demand for a united front, however, is looked upon with suspicion in certain Socialist quarters and has been characterized as insincere. Already, the Norwegian Labor Party, one of the strongest members of the Communist International, has withdrawn from the Moscow group because conditions laid down at the last congress would mean, it is declared, abolition of the self-government of national parties.

The failure of Communism can also be ascribed to its inability to provide peace, bread and liberty. The Communists failed to make good the expectations of the people, and the counter-revolution set in, such as the Fascist movement in Italy, which uses the same slogans and the same incentives for the black shirt revolution as for the red.

Russia is once more "one and indivisible," this time, of course, under Communist control. Russia is red from the Baltic and the Gulf of Finland to the shores of the Pacific Ocean, a great mass of populations solidly united under leaders who have proved their power. From one end of the country to the other Russia had a new nationalism, a new army retrained, re-disciplined and re-equipped, a new social order.

In the United States there have been two noticeable developments during the past year as far as the Communists are concerned. First, a let-up on the part of state and federal authorities in prosecuting these radicals for alleged illegal activity and, second, the formation of an open and above-ground Communist organization, the Workers' Party, which is making every possible overture to the conservative trades unions for affiliation within the revolutionary fold.

Under the first heading may be listed the pardon granted William Bross Lloyd, millionaire Chicago Communist, and sixteen of his associates scarcely more than a week after they had been imprisoned for from one to five years for violation of the Illinois Anti-syndicalist Act. Ben Gitlow, New York Communist, has succeeded in appealing his sentence under the New York Criminal Anarchy Law to the United States Supreme Court and he is now out on bail. Delegates to the second national convention of the Workers' Party, held late in December in New York City, were able publicly to declare for "the dictatorship of the proletariat," and the "supplanting of the existing capitalist government with a Soviet government" without interference from the Department of Justice. Armed revolt was not included in the Workers' Party program as it is the intention of Communist leaders to keep the party working legally. Force and violence, if these are to be employed at all, will be left in the hands of the "underground" movement, the Communist Party of America, which was outlawed and driven to cover by the raids of the Federal agents in 1920.

Under the instructions from Moscow to

work for a united front, the Workers' Party attempted to gain participation in the Cleveland Conference for Progressive Political Action. The move failed, its delegates being refused seats on grounds of "un-Americanism." Nevertheless, the Workers' Party will continue to strive for an independent political party of labor dedicated to the class struggle. In the labor movement, the Communists have succeeded in forcing the resignation of a number of conservative labor leaders, particularly in the needle trades. The Trade Union Educational League, an avowedly Communist industrial organization, inspired by William Z. Foster, noted leader of the 1919 steel strike, continues to pursue its policy of "boring from within" the conservative trades unions in an effort to revolutionize both their leadership and their policies, to pave the way for the ultimate struggle of labor against capital. Foster's policy is violently opposed to that of dual unionism, exemplified by the Industrial Workers of the World; he insists that revolutionary workers should remain at all costs in the conservative unions instead of breaking away from them and thus keeping out of touch with the mass of American workers. Foster and 19 other Communist leaders faced trial early in 1923 in Michigan following arrests growing out of a secret meeting at which it is charged plans were laid to spread the advocacy of armed revolt against the United States government.

COMMUNITY SERVICE, an outgrowth of the work of War Camp Community Service. It exists because cities and towns in the United States realized at the close of the war as never before that a vigorous citizenship and a healthy community life in peace time as well as in war time were impossible unless the community were provided with adequate leadership in spare time activities, and unless it were so organized as to insure the widest possible use of this leadership and of existing recreational facilities. Community Service undertakes work in a community only in response to a definite invitation from some responsible group of representative citizens.

Upon accepting an invitation, the national headquarters of Community Service lends community organizers to a city for a brief period to help in the organization of a local Community Service committee representative of all community interests, the expense of this work being shared by the town or city. The workers also assist in helping to raise funds and in securing and installing the executive secretary, in order that the work may be permanent. The local Community Service group is entirely autonomous and self-governing, receiving its support from citizens who believe in the community's leisure-time life.

Community Service committees in helping to organize a community's recreational resources, seek to bring about:

I. The finding and training of volunteer leadership in athletics, games, social gatherings, dramatics, community music and neighborhood organization.

II. The organization of such activities as athletics and outdoor sports, vacant lot play, social events and hospitality clubs.

III. The maximum use of existing facilities such as playgrounds, gymnasiums, parks and church and club facilities.

IV. The creation of opportunities for the expression of such cultural interests as community drama, pageantry, community music and art exhibits.

V. The creation of such needed facilities as neighborhood centres, rest rooms and summer camps.

VI. The provision of educational and citizenship activities, which may be developed through public discussions, forums, educational classes and study clubs.

Community Service organizations of the character outlined were in 1922 more than 175 in as many American communities. Community Service has national headquarters at 315 Fourth Avenue, New York City. The officers in 1922 were: president, Joseph Lee; treasurer, Myron T. Herrick; secretary, Howard S. Braucher.

COMORO AND THE MAYOTTE ISLANDS, a group of five islands in the Indian Ocean off the coast of Madagascar, and since 1912 a colony of France forming the 23d province of the general government of Madagascar. The area of the group is 790 square miles with a population of 97,617. Vanilla, cacao, aloes, sugar, perfume plants, and rough lumber are the chief exports. Imports consist of cotton textiles, metals and rice. See MADAGASCAR.

COMPARETTE, Thomas Louis, American numismatist and author: b. Dekalb County, Ind., 9 April 1868; d. Philadelphia, Pa., 3 July 1922. He was educated at the University of Wooster, Ohio. In 1893 he received the degree of A.B. from the University of Michigan. In 1901 the degree of Ph.D. from the University of Chicago. He attended the American School of Antiquities, Rome 1901-02 and the universities of Halle and Berlin 1903-04. From 1893 to 1897 he was professor of Greek and Latin in the Texas Christian University at Waco, Texas. He served as assistant in Latin at the University of Missouri, 1905 and that year went to the United States mint at Philadelphia as curator of the numismatic collection. He was a member of the American Association of Museums, and the American Institute of Archeology. He contributed articles on Roman municipal and state administration and to researches in history of commerce and coinage. He compiled a catalogue of coins and medals in the numismatic collection of the Philadelphia mint, 1912-14, and wrote: 'The Debasement of the Silver Coinage Under the Emperor Nero' (1914); 'Aes Signatum' (1919); 'Descriptive Catalogue Selected Greek Coins' (1921).

CONCILIATION, Industrial. See INDUSTRIAL ARBITRATION.

CONCLAVE, the closed room or hall set aside and prepared for the cardinals when electing a pope; also the assembly of the cardinals for the election of a pope. In the early ages the election of the successor of Saint Peter was most probably restricted to the clergy of Rome. After the 4th century the people were admitted, and the emperors were often represented. The clergy resented the influence of the emperors.

The clash of interests often resulted in long delays, and sometimes in violent disputes. A decree of the Synod of the Lateran in 769 forbade the laity to have part in the election. Little by little the influence of the cardinals in papal elections waxed stronger, till in 1059 Pope Nicholas II placed power of election in the hands of the cardinals and conceded to the lower clergy and laity only the ceremony of assenting to the election. This ceremony was called "laudatio." Finally the Lateran Council in 1139 placed the matter entirely in the hands of the cardinals, and for election required two-thirds majority of the cardinals present. When Clement IV died in 1268 the cardinals met for election at Viterbo. The election and consequent vacancy of the Holy See lasted two years and nine months. The local authorities lost patience in the end and shut the cardinals in a room with orders to elect a pope at once. The action was effective and Gregory X was elected. So highly did the new pope think of the scheme of shutting up the cardinals that under him the second Council of Lyons decreed that thereafter the cardinals should assemble 10 days after the pope's death, in the city where the pope died, and shut off from all outside influence proceed at once to the business of election. As a means of preventing undue delay the decree ordered that if the cardinals came to no agreement within three days their food should be lessened and after a further delay of five days it was still more restricted. The event proved his wisdom. The next election lasted only one day.

The decree of Gregory X (known as "Ubi periculum majus") is the beginning of the idea of conclave, and there we find the word first mentioned. The fundamental principle has lasted to the present time, with few interruptions. Various changes were made from time to time till Pius X published his regulations in 1904. Pius XI completed the legislation by certain modifications during the past year.

The constitution of Pius X, known as "Vacante Sede Apostolica" and dated 25 Dec. 1904, preserves the conclave idea of Gregory X. Before the conclave begins certain formalities must be observed. First of these is verification by judicial act of the death of the Pontiff. This is done by the Cardinal Camerlingo, who is head of the papal household. This same cardinal together with three others form a committee to arrange for the obsequies of the pope and prepare for the conclave. Finally there is a "Congregatio" or meeting of the cardinals actually in Rome at which the laws governing the conclave are read, and the cardinals take oath to observe them. A commission is appointed to select and examine the officers of the conclave such as masters of ceremonies, confessors, physicians, servants of various kinds and the official marshal of the conclave. The latter since 1721 has been a member of the Chigi family.

In the meantime the date is set for the opening of the conclave, and the place is appointed and made ready. In modern times the conclave is held in the Vatican palace. A large part of the palace is walled off and divided into apartments each with three or four rooms or cells. These are occupied by the cardinal with his secretary and servant. All are sworn to secrecy.

Communication with the outside world is completely shut off, and severe penalties are meted out to violators of this rule. Cardinals may leave in case of illness, or enter if they arrive in Rome too late for the beginning of the conclave.

Only cardinals have a right to vote in the election of a pope, and all cardinals have a right to do so. Even if the pope should die during the progress of a general council the right of election is restricted to the cardinals.

The law of Pius X clearly stated that the conclave should begin 10 days after the death of the pope. It happened, however, on the death of Pius X that Cardinal O'Connell of Boston could not reach Rome in time for the conclave. And in February 1922 three cardinals from America, Cardinal O'Connell of Boston, Cardinal Begin of Quebec and Cardinal Dougherty of Philadelphia, did not arrive in time for the election. It was decided therefore that 10 days were not sufficient. Besides the new pope, and the sacred college generally, wished to show their appreciation of America and to have in the conclave the benefit of American opinion. Hence by a decree dated 1 March 1922, Pope Pius XI decided that the conclave should not begin until 15 days after the death of the pope. It is hoped this will enable the cardinals of America to participate in the election of popes in the future.

Election is by vote, which is taken by secret written ballot. Two-thirds are necessary for election. Ballots are usually taken twice a day till some one receives the number required.

When the election is complete the other cardinals do reverence to the new pope. At the election of Pius XI a feature much commented on was the blessing of the people from the exterior balcony of Saint Peter's. This was an ancient custom, but omitted since 1870 as a protest against the occupation of the papal states by the Italian government. Some considered the action of Pius XI as a renunciation of all claims to the papal states. But the secretary of the Sacred College put an end to all discussion when he officially declared (6 Feb. 1922) that the pope intended his act as a manifestation of good will to the whole world and of his hope for universal peace. Ferraris, *'Bibliotheca Canonica VI'* (Rome 1890, s. v. Papa); Ojetti, *'Synopsis Rerum Moralium et Juris Pontificii'* (Rome 1909, s. v. Conclave); Wernz, *'Jus Decretalium'* (Vol. 2, Rome 1899); *Revue des Deux Mondes* (15 March 1904); *'Acta Apostolicae Sedis'* (vol. XIV, no. 6); *'Codex Juris Canonici'* (Appendix, Documentum 1); *'Catholic Encyclopedia'* (s. v. Conclave).

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CONCORDIA COLLEGE, a Lutheran co-educational institution, founded 31 Oct. 1891 and located at Moorhead, Minn. In 1922-23 it had a faculty of 27 members, 325 students, property valued at \$400,000 and an income of \$53,500. Johan A. Aasgaard is president.

CONDENSED MILK. See **FOOD STANDARDS, FEDERAL.**

CONFEDERATE VETERANS, United. See **UNITED CONFEDERATE VETERANS.**

CONFEDERACY, United Daughters of the. See **DAUGHTERS OF THE CONFEDERACY, UNITED.**

CONGO, Belgian. See **BELGIAN CONGO.**

CONGO, French. See **FRENCH EQUATORIAL AFRICA.**

CONGREGATIONALISTS. See **CHURCHES IN THE UNITED STATES, STATISTICS OF THE.**

CONGRESS OF THE UNITED STATES. See **UNITED STATES.**

CONNECTICUT, one of the 13 original States of the United States. It is bounded on the south by Long Island Sound, east by Rhode Island, west by New York and north by Massachusetts. It has an area of 4,965 square miles, which is 46th place in size, and a population of 1,380,631, which gives it 29th place in order of population. Of the total population in 1920, 1,359,585, were whites and 21,046 were negroes. The foreign born population numbered 376,513, including 22,708 English, 45,464 Irish, 22,614 German, 38,719 Russian, 80,322 Italians, 17,697 Swedish and 7,487 Scottish. Hartford, the capital, had a population in 1920 of 138,036. The other chief cities of the State with their populations are: New Haven, 162,537; Bridgeport, 143,555; Waterbury, 91,715; New Britain, 59,316; Meriden, 29,867; New London, 25,688; Ansonia, 17,643; Middletown, 22,129; Greenwich, 22,123 and Torrington, 22,055.

Religion.—The chief religious denominations in order of their strength are Roman Catholics, Congregationalists, Protestant Episcopalians, Methodists and Baptists.

Education.—Primary education is free and compulsory. It is free for all children between the ages of 4 and 16 and compulsory for all between the ages of 7 and 16. There are in the State 1,330 primary schools, with 6,195 teachers and 230,963 pupils; 78 public high schools, with 1,148 teachers and 27,426 pupils; four normal schools for the training of teachers, with 42 professors and 478 students, 11 model schools with 101 teachers and 3,677 pupils. Yearly expenditure on education averages \$16,500,000. There is an Agricultural and Mechanic Arts College at Storrs. For higher education, there are Yale University at New Haven; Wesleyan University at Middletown; Trinity College at Hartford and the Connecticut College for Women.

Agriculture.—There are in the State 22,655 farms with a total area of 1,898,980 acres, of which 701,086 acres is improved land. The total value of all farm property in 1920 was \$226,991,617. The chief crops, with their acreage, yield and value, for the year 1922 according to the final estimate of the United States Department of Agriculture were: Corn, 77,000 acres, 3,465,000 bushels, \$3,326,000; oats, 11,000 acres, 308,000 bushels, \$200,000; buckwheat, 2,000 acres, 36,000 bushels, \$50,000; rye, 5,000 acres, 100,000 bushels, \$150,000; tame hay, 323,000 acres, 436,000 tons, \$1,336,000; potatoes, 24,000 acres, 3,360,000 bushels, \$3,360,000; tobacco, 28,000 acres, 35,000,000 pounds, \$9,450,000; apples, 1,300,000 bushels; peaches, 262,000 bushels and pears, 60,000 bushels. On

1 Jan. 1923, there were in the State 36,000 horses, valued at \$4,608,000; 141,000 milk cows, valued at \$10,998,000; 38,000 other cattle, valued at \$1,121,000; 8,000 sheep, valued at \$62,000 and 45,000 hogs, valued at \$796,000.

Mining and Manufacturing.—The State produces some iron ore, granite, trap rock and lime stone. Bricks, tiles and pottery are manufactured and crystalline quartz and infusorial earth are also worked. The latest census of manufactures showed in the State 4,878 manufacturing establishments, capitalized at \$620,194,000, and employing 226,500 hands. These establishments use yearly raw materials, valued at \$288,511,000, and produced goods valued at \$545,472,000. The chief manufactures are bronze, brass and copper products, all kinds of machinery, silk goods, hardware, cutlery, electrical supplies, rubber goods, ammunition, boots and shoes, hats, typewriters, fire arms, pins and needles, clocks, paper, cannons, knit goods, woollens, lumber, clothing, steam engines and pumps.

Railroads, Roads, etc.—In the early days of the State shipping was important, but, it is now negligible, only a few coastwise lines calling at the State ports. The State has a good road system, which is utilized by many motor truck lines for the hauling of great quantities of goods and materials to the New York, Rhode Island and Massachusetts markets. There are 1,001 miles of railroad in the State and 833 miles of electric railways.

Finances, Banking, etc.—At the beginning of the fiscal year, 1921–22, the State treasury had on hand a balance of \$86,008.87. During the fiscal year, 1921–22, receipts amounted to \$20,794,735.11. Disbursements during the same period amounted to \$20,437,810.67, leaving a balance at the beginning of the fiscal year, 1922–23, of \$1,192,933.31. The estimated receipts for the period 1923–25 are \$32,977,100. State indebtedness amounts to \$16,281,100. In 1922, the assessed value of all real property in the State was \$1,962,763,631; personal property, \$4,528,760. The annual report of the State bank commissioner made public 27 Dec. 1922, showed that deposits in savings banks and trust companies in Connecticut increased \$27,850,060.11 in the year 1922, and the assets of these institutions showed an increase of \$30,658,751.96. The total of savings and commercial deposits of all State banks was \$594,277,579.19, compared with \$553,427,519.08 on the same date in 1921.

Government.—The State executive power is vested in the governor, who is elected for two years. Legislative power is vested in the General Assembly, consisting of a Senate and a House of Representatives. The Senate has 35 members and the House of Representatives has 258 members. Members of both houses are elected for two years. The legislature meets biennially in odd years on the first Wednesday after the first Monday of January.

Officials, 1922.—Governor, Everett J. Lake; lieutenant-governor, Charles A. Templeton; secretary of state, Donald J. Warner; attorney general, Frank E. Healy; treasurer, G. Harold Gilpatrick; comptroller, Harvey P. Bissell.

Officials, 1923.—Governor, Charles A. Templeton; lieutenant-governor, Hiram Bingham;

secretary of state, Francis A. Pallotti; attorney general, Frank E. Healy; comptroller, Frederick M. Salmon; treasurer, G. Harold Gilpatrick; auditors, Lewis W. Phelps and William H. Bailey.

Judiciary.—Members of Supreme Court: Chief Justice, George W. Wheeler, Bridgeport; Associate Justices, John K. Beach, New Haven; Howard J. Curtis, Stratford; Lucien F. Burpee, Hartford, and John E. Keeler, Stamford.

CONNECTICUT AGRICULTURAL COLLEGE, a non-sectarian co-educational institution, founded 6 April 1881, and located at Storrs, Conn. Statistics for 1922–23 show a faculty of 72 members (21 in the extension division, 7 connected with the experiment station and 44 resident teachers), and a student body numbering 480. The institution's property was valued at \$2,626,520 and its income for the year amounted to \$504,565. Charles L. Beach, B.Agr. B. S., is president.

CONNECTICUT COLLEGE FOR WOMEN, a non-sectarian educational institution, founded in 1911 and located at New London, Conn. In 1922–23 it had a faculty of 47 members, 414 students, property valued at \$1,750,000 and an income of \$300,000. Benjamin T. Marshall, A.M., is president.

CONSTANTINE, former King of Greece: b. 2 Aug. 1868; d. Palermo, Italy, 11 Jan. 1923. His father was King George I of Greece who died in 1913. George was the son of King Christian of Denmark and was thus brother of Queen Alexandra of England. Constantine, on his father's side, was therefore a nephew of King Edward VII and a first cousin of King George V.

Constantine's mother was the Grand Duchess Olga, daughter of the Grand Duke Constantine of Russia who was brother of the Tsar Alexander II "the Liberator" assassinated in 1881. On his mother's side, Constantine was thus a first cousin of Tsar Alexander III, whom he resembled in his heavy physique, and a first cousin, once removed, of the last Tsar Nicholas, with whom the Romanoff Dynasty came to a tragic end.

On 27 Oct. 1889, Constantine somewhat displeased Queen Victoria by marrying the Princess Sophia, sister of the German Emperor, William II. Her mother was the Empress Frederick, Crown Princess of England and eldest child of the British Queen. By marriage, then, Constantine is again a first cousin of King George V. No ties of family could have been closer than were his with the Royal Families of Denmark, Germany, Russia and Britain. But he had in his veins no drop of Greek blood. And at Athens his dynasty had been merely an imported political device.

Neither as Crown Prince nor as King did he ever take the position that the Greek throne is constitutional, as the term is understood throughout the British Commonwealth. Greece had a Prime Minister, a Cabinet and a Parliament, but Constantine was none the less unsatisfied unless he ruled. In 1897, he fought in the war against Turkey, as Crown Prince, but with only indifferent success. But in the two Balkan Wars, wherein Greece and her Allies had a

preponderance over Turkey and then over Bulgaria, he was hailed as a hero. To what extent he really contributed to the victories which Greece owed as much to other nations as she did to her own prowess, is an interesting question.

In 1913 Venizelos signed a defensive treaty between Greece and Serbia. The objective of the Treaty was a hostile and embittered Bulgaria but when the Great War broke out and Serbia was attacked, both by Austria and by Bulgaria, it was held that Greece was bound in honor to come to her assistance. This was the decision which Venizelos advised. But, on various pretexts, Constantine steadily overruled him, dismissing him from office on 5 Oct. 1915. In December, the Greeks supported the King at elections which he conducted as an absolute monarch. Had he been promised Constantinople, the King would have risked war. But, although he disapproved of the invasion of Belgium, his real conviction was that the Germans would win. He believed in the German kind of autocracy. More than that, he dreaded the German Army. He dared not face that terrible machine, acting as it would act through Austria-Hungary, Turkey and Bulgaria, on the Greek frontier. Greece maintained her neutrality.

As a nation the Greeks are easily swayed. The Allies occupied Salonica and they also had forces in Athens. On 11 June 1917, Constantine came to the conclusion that neutrality was no longer possible and he fled from the country. He took refuge in Switzerland, leaving Venizelos in command. Constantine's throne fell to his second son Alexander who accepted the constitutional advice of his ministers. But on 25 Oct. 1920, Alexander died by the bite of a pet monkey. The throne again fell vacant.

There is no doubt as to the great gains secured to Greece by Venizelos through the Treaty of Sèvres with Turkey and the Treaty of Neuilly with Bulgaria. She held Smyrna. She held the Islands of the Aegean. She held Thrace. But in November, 1920, Venizelos was defeated at the polls. On 5 Dec. 1920, much to the resentment of the Allies, a plebiscite was held on the question whether Constantine should be recalled, and as the result was in the affirmative, he entered Athens with his family on 19 Dec. 1920.

What the Greeks seem to have wanted was a cessation from foreign adventure and a spell of peace. That was their reason for ousting Venizelos and summoning a king who had tried to keep them out of war. The fatal blunder of Constantine was that, mistaking the public temper, he embarked on a new war with Turkey, the first objective of which was the complete conquest of Asia Minor and the second, the seizure of Constantinople itself.

He had against him not only Turkey but Italy and France. In his attempt to advance finally on Constantinople, he was resisted by all the Allies. His campaigns ended in irretrievable disaster, luridly illuminated by the sack of Smyrna. A military revolution broke out and on 27 Sept. 1922, Constantine fled a second time, landing in Italy and finally settling in Palermo. As elsewhere recorded, his leading ministers were promptly tried for treason and shot. The

Duke of Sparta—the King's eldest son—succeeded as George II.

Constantine's exile was brief. He was a broken man. Suffering from arteriosclerosis and nephritis, he walked slowly and with bowed head. He tried the cure at Salsomaggiore but evidently it did not avail him. The end came suddenly and was quite unexpected.

As husband and father, the conduct of Constantine was exemplary. He leaves behind him a widow and five children—King George II, born 19 July 1890 and married to Elizabeth, elder daughter of King Ferdinand and Queen Marie of Rumania; Princess Helene, born 2 May 1896 and married to Carol, Crown Prince of Rumania; Prince Paulos; Princess Irene and Princess Catherine.

Constantine's brother, Prince George is High Commissioner of Crete. Another brother, Prince Andrew, after narrowly surviving a trial for treason, visited the United States with his wife, Princess Alice, the daughter of the Marquis of Milford Haven early in 1923; His youngest brother, Prince Christopher is the husband of Anastasia, widow of William B. Leeds.

CONSUMPTION. See TUBERCULOSIS.

CONVERSE COLLEGE, a non-sectarian educational institution for women, founded in 1890 and located at Spartanburg, S. C. In 1922-23 it had a faculty of 37 members, 408 students, and property valued at \$783,963.29 plus endowment of \$462,000. Its income for 1921-22 was \$200,345.51. Robert P. Pell, B.A., Litt.D., is president.

COOPER, Duncan B., American editor: b. 1843; d. Nashville, Tenn., 4 Nov. 1922. He was an active political force in his State, though never a candidate for office. At one time he was editor and publisher of the *Nashville American*, now extinct. Colonel Cooper came into nationwide prominence in the fall of 1908 as a result of the killing of former United States Senator Edward Ward Carmack, on the streets of Nashville, Tenn., during a heated political campaign. The tragic death of Carmack at the hands of Colonel Cooper, and his son Robin, now also dead, was the culmination of one of the bitterest political fights in the history of Tennessee. At the time Carmack was editor of the *Nashville Tennessean*. Following his defeat in a Democratic primary by Malcolm R. Patterson of Memphis for the gubernatorial nomination Carmack in *The Tennessean* began a bitter editorial war on Governor Patterson after the latter's inauguration, and the name of Colonel Cooper, as one of the staunch friends and advisers of the governor, often appeared in the editorial column. Word was sent to Carmack by a mutual friend that Cooper would not countenance further public use of his name. The next day an editorial paragraph was written in which sarcastic reference was made to Colonel Cooper. The following day Duncan Cooper and his son Robin met Carmack as he was approaching his apartments in the city. Shots were exchanged and Carmack fell with a fatal wound. Robin Cooper was also shot but recovered, Colonel Cooper was uninjured. The trial that followed resulted in the conviction of both Coopers, the elder receiving a sentence of 20 years in prison

and the son a lesser term. An appeal was taken to the Supreme Court; which however affirmed the verdict in the case of Colonel Cooper but awarded the son a new trial. As soon as the decision of the court was announced, Governor Patterson issued a pardon for Duncan Cooper. Robin Cooper's case, on retrial, was dismissed for want of a prosecutor. Several years ago Robin Cooper's dead body was found in a creek, beside which was his automobile. His slayers were never apprehended.

CO-OPERATIVE ASSOCIATIONS, Farmers. See AGRICULTURE IN THE UNITED STATES, subsection AGRICULTURAL LEGISLATION; FARM BUREAU FEDERATION, AMERICAN.

CO-OPERATIVE MOVEMENT. United States.—Co-operation in the United States during the year 1922 made considerable progress in the direction of further unification of the movement. The forces of the consumers' co-operatives are being consolidated to an increasing extent through their national federation, the Co-operative League of the United States of America with headquarters in New York City. An outstanding achievement of the movement during the past year was the holding of the Third National Co-operative Congress. Delegates from 16 States, representing a membership of 70,000 co-operators and hundreds of thousands of trades unionists and farmers, met at Chicago, 26-28 October. The Congress was presided over by James P. Warbasse, president of the Co-operative League, and a member of the Central Committee of the International Co-operative Alliance. Technical information on practical co-operative problems was exchanged by the delegates, who included nationally known co-operators. There were reports and discussions on co-operative banking, accounting, legislation, the income tax, the relation of labor to the Co-operative Movement, spurious co-operation, wholesaling, etc. Managers gave reports on store management, on how to meet competition, the organization of district co-operative leagues, and other technical matters of co-operative administration.

Discussion at the Congress disclosed the fact that co-operatives in specialized fields such as housing, milk distribution, bakeries and banking, met with more success during the past year than the distributive grocery stores, attributable perhaps to the high rate of profit, and the absence of intense competition existing in enterprises of the former group. Grocery stores, operating on only a small margin of profit, and subjected to the competition of chain stores, apparently do not succeed quite so well as other co-operative activities.

The organization of a large creamery in Minneapolis, now supplying 30,000 families with \$2,500,000 worth of dairy products annually, on a strictly co-operative basis, was one of the most successful of the recent co-operative achievements. This dairy, the Franklin Co-operative Creamery Association, was opened in 1920 by dairy workers who had been locked out during an industrial dispute. With the aid of the labor unions of Minneapolis and Saint Paul, these workers organized an association which any consumer might join. They

now have a membership of 6,000 consumers. Two dairy plants are operated, and more than 100 wagons are daily employed in milk distribution. The co-operative dairy lowered the price of milk three cents a quart, thus saving the consumers of Minneapolis more than a million dollars annually. The quality of milk was improved by this consumers' dairy to such an extent that, according to the Public Welfare Commission, deaths from typhoid were practically wiped out, and infant mortality was considerably lowered. In addition to these benefits, the earnings of the business are distributed among the patrons, in proportion to their purchases.

Another co-operative dairy was established in Cleveland, Ohio, in 1922, due to the combined aid of the Co-operative League and the Franklin Co-operative Creamery. It has the highest rating in the city of Cleveland for purity of product.

A development which made considerable headway during 1921 and 1922 was the establishment of semi-co-operative labor banks. The first venture of this type was established as a national bank by the Brotherhood of Locomotive Engineers in Cleveland, November 1920. Opened with resources of \$650,000, the assets grew within two years to \$19,000,000. The bank limits the rate of profit of shareholders to 10 per cent, excess earnings being returned to depositors. This is said to be the only bank organized under the National Banking Act which returns earnings to depositors. A significant policy of this bank is its refusal to lend money to establishments known to be unfair to labor. The success of the Brotherhood of Locomotive Engineers' Co-operative National Bank in Cleveland gave an impetus to the formation of a dozen labor banks organized along the same lines. The Amalgamated Clothing Workers of America own a bank in Chicago which, in October 1922, had resources of \$1,500,000. There are banks organized, or in process of organization, in California, Pennsylvania, Alabama, Arizona, New York and other States, existing for the avowed purpose of keeping the financial power of trades unionists in the hands of institutions controlled by, or sympathetic to, labor.

A similar development is the formation of credit unions, or small mutual credit societies, which operate on a strictly co-operative basis. At the end of 1921 there were 86 credit unions in New York, with total resources amounting to about \$4,500,000, which made loans of about \$4,000,000 to needy members. In Massachusetts at the end of 1921 there were 82 credit unions, with total resources of about \$4,000,000, which had made loans to members of about \$3,000,000. About a dozen States have laws authorizing the formation of credit unions.

The co-operative construction and ownership of homes was successfully adopted by many groups during 1922. In Milwaukee, the Garden Homes Company erected 90 homes owned by the co-operative association of tenants. Hundreds of other buildings are in process of construction. In New York City there are several co-operative apartment buildings.

During 1922 the distributive co-operatives rendered great service to labor organizations involved in strikes. Miners and railroad workers were given credit or goods by co-operative societies, particularly in Massachusetts, Rhode Island, Minnesota and Illinois.

In March 1922 the last of the centralized semi-co-operative concerns, which had been warned against by the Co-operative League as an unsound development, became bankrupt. The Pacific Co-operative League of San Francisco, involving a chain of 43 stores, went into the hands of receivers. Far from regarding the debacle of this centralized concern as a blow to the movement, genuine co-operatives hailed it as a necessary house-cleaning of an element which was reflecting discredit upon the movement.

The educational work of the Co-operative League went forward during 1922. The Inter-collegiate Co-operative Society, launched by the League, for the purpose of organizing groups of students in all colleges and universities for the study of the Co-operative Movement, established its first chapter at Marquette University, Milwaukee, through the efforts of Father Joseph Reiner.

A Model State Co-operative Law was drafted by the committee on legislation of the League, for adoption by all State legislatures. The great legislative need of co-operatives is for protection against the spurious promotion concerns which falsely use the word "Co-operation" to float stock-selling schemes. To meet this need, and to secure uniform co-operative legislation, the League is conducting a campaign for the adoption of the Model Co-operative Law by every State in the Union. See also AGRICULTURE; HORTICULTURE.

The Co-operative League acquired new headquarters and moved into its own building at 167 West 12th street, New York City. The officers of the League for 1922-24 are: President, James P. Warbasse, Brooklyn, N. Y.; vice-president, A. P. Bower, Reading, Pa.; secretary, John F. McNamee, Cleveland, Ohio; treasurer, W. Niemela, Maynard, Mass.

INTERNATIONAL CO-OPERATION.

International Co-operative Alliance.—Co-operative organizations of 25 lands, representing 30 million members, are banded together internationally, through the International Co-operative Alliance. The 10th Congress of the International Co-operative Alliance held at Basle, Switzerland, in the summer of 1921, which was the first International Co-operative Congress convened since the war, laid plans for the establishment of an international co-operative bank and wholesale. Mr. G. J. D. C. Goedhart of Holland was elected president of the International Co-operative Alliance, and Mr. Henry J. May of England was re-elected general secretary. The co-operative movement of the United States is represented on the central committee of the International Co-operative Alliance by Dr. J. P. Warbasse, president of the Co-operative League. The executive committee of the International Co-operative Alliance met at Brussels in January 1922 and appointed a deputation to visit Russia

to investigate the status of the co-operative movement in that country. In March the special deputation visited Russia, reporting as a result of their investigations that the Russian movement, which from 1919 to April 1921 had been dominated by the state, was now on a voluntary basis again; that the societies now had "their own capital, their own general meetings, and their own managers." In October 1922 the executive committee of the International Co-operative Alliance met at Essen, Germany—the first international co-operative meeting to be held in Germany since the war. It was decided to designate the first Saturday of July as International Co-operators' Day. Resolutions were adopted condemning the attitude of the Fascisti toward the co-operatives of Italy; reports were received from co-operative delegations to Russia and Georgia, and the subject of international co-operative trading was discussed.

Great Britain.—The Co-operative Union, the educational federation of the British Co-operative Movement, held its 54th Annual Congress in Brighton, England, in June 1922. The 1,600 delegates represented a membership of 4,548,557, an increase of about 50,000 members over the membership of the preceding year. With their families, the co-operators represent 40 per cent of the population of Great Britain. During the past 10 years, the membership of co-operative societies grew 15 times faster than the population. For the first time in the history of the movement, the sessions were presided over by a woman, Miss M. Llewelyn Davies, as president of the congress. The congress went on record in favor of the establishment of an independent co-operative daily newspaper and a co-operative college. The political policies of the movement and the attitude of co-operative societies towards their employees, were discussed. According to the latest available figures, those for the year ending 1921,—the retail establishments of the co-operatives supplied £218,780,384 worth of goods to their members, or nearly £20,000,000 more than in 1919. While the receipts from sales in 1921 decreased 13.9 per cent as compared with the sales in 1920, the decrease was lower than the percentage of reduction in prices. In other words, the amount of business done was actually increased, although due to the decline in prices, the income was reduced. At the end of 1921 the share capital of co-operative societies amounted to £83,103,213; the stocks on hand in their establishments were valued at £40,000,000; while their reserves amounted to £10,579,989. In the parliamentary elections in November 1922, 11 candidates were in the field for the Co-operative Party, four being elected to Parliament. These representatives organized their own party caucus. Many members of Parliament elected by the Labor Party are leaders in the co-operative movement, and join the Co-operative Party representatives in issues involving the welfare of co-operative societies.

Germany.—The Central Union of German Distributive Co-operative Societies (Zentralverband deutscher Konsumvereine) now has a membership of 1,887 co-operative societies,

including local distributive societies, insurance, and wholesale federations. The societies affiliated with the federation represent a membership of 2,834,000. There are 2,400 consumers' distributive co-operatives in Germany, with 4,500,000 members. All told, there are 40,000 co-operatives of various types in Germany, half of them being credit unions. Co-operatives continued to flourish during 1921, the federated membership being increased by 120,000 over the previous year, while the number of those employed by co-operative establishments also increased. The figures for the income of both retail and wholesale enterprises show a tremendous increase, due for the most part to the decline in the value of the mark. However, it is possible to estimate the progress of the movement from the increase in the number of members. The Co-operative Insurance Society wrote more than a million policies during 1921. The German Co-operative Wholesale Society made much progress. Two new warehouses were established, bringing the number up to 10. The German Co-operative Wholesale Society has a coffee-roasting department, a spice mill, wine cellar, coffee, cocoa and spice-packing departments, soap factories, and other productive establishments, in addition to a bank. Germany ranks perhaps as high as Great Britain in the number of affiliated co-operators and in the extent to which co-operative distribution and production are supplanting the profit-system.

Austria.—The co-operative movement of this country is perhaps the only organized industrial force standing between its people and starvation. Although itself impoverished by the almost negligible value of Austrian currency, the co-operative movement is caring for the wants of between one-third and one-half the population of the country. The Central Union of Co-operative Societies, which does not represent by any means all the distributive co-operatives, had affiliated with it at the end of 1921, 704 distributive establishments, with a membership of 574,116. The Co-operative Society of Vienna alone conducts 144 distributive stores, supplying half the population. In addition, it conducts a savings bank, refrigerator plant, bakery, slaughterhouse, printing works, fuel department, and several productive establishments. Co-operative housing societies are springing up among the people as a means for coping with the shortage of homes. Observers testify to the beauty of the buildings and the great saving they effect for their co-operative tenants. Many of these groups of buildings are being erected upon what were formerly the estates of the nobility.

France.—During 1922 the private traders made a concerted attack upon the co-operative societies by attempting to secure national legislation taxing co-operative establishments upon their turnover. On 4 Dec. 1921 all co-operative societies celebrated Co-operative Day by soliciting new members. The result was a substantial increase in membership. In February 1922 there were 2,098 distributive co-operatives affiliated with the National Federation of Distributive Societies. This represents about one-half the number of societies and co-operators in France. There are approximately 2,500,000

members of co-operative societies, and the turnover of their distributive stores amounts to \$250,000,000 annually. Due to the marked financial growth of the banking department of the Co-operative Wholesale Society (*Magasin de Gros*), it became necessary in May 1922 to create an independent co-operative bank. The shares of this bank are owned by the co-operative wholesale and retail societies. The by-laws of the association provide that the profits in excess of 6 per cent on the capital are to be divided among the borrowers. The primary purpose of the bank is to provide credit for the affiliated co-operative societies.

Italy.—There are to-day about 20,000 co-operative societies in Italy of the most bewildering variety. Most of them are agricultural and credit societies; many are labor associations of masons, bricklayers, dockers, and other skilled and unskilled workers, who take contracts for construction work. There are about 6,000 co-operative stores. The societies are divided according to their political and religious affiliations. There are co-operatives of Socialists, Nationalists, Catholics, ex-soldiers, Republicans, Communists, Trades' Unionists, and Fascisti. In the past the Italian government loaned vast sums of money to the co-operatives. With the accession to power of the Fascisti, these subsidies were withdrawn, leaving the co-operatives in a tottering condition. During the year, hundreds of co-operatives were destroyed or confiscated by the Fascisti, while hundreds of other societies were prevented from effectively operating. Armed bands of Fascisti, whose operations were financed and supported by private merchants, burned to the ground co-operative societies in Ferrara, Bologna, Parma, Turin, Verona, Tuscany, Mantua, Padua, and other provinces. The International Co-operative Alliance and its affiliated members addressed vigorous protests to the Italian government for its failure to protect the co-operatives, which are dedicated to a peaceful, orderly change of the contemporary economic society.

In all parts of the world, the Consumers' Co-operative Movement made slow and steady progress in the year 1921-22.

HARRY RAPPAPOORT,

Publicity Director, The Co-operative League of the United States of America.

COPPER. The smelter production of copper in 1922, according to the United States Geological Survey, as compiled from reports of the smelters covering the actual production for 11 months and the estimated production in December, was about 981,000,000 pounds, an increase of 475,000,000 pounds over 1921. Productive work was resumed by practically all the large mining companies except the United Verde Copper Company by or during April 1922, one year from the general shutdown of the copper mines. The smelter production of copper for December, as estimated by the producing companies, was 103,300,000, or at the rate of about 1,240,000,000 pounds a year. The total production of new refined copper from domestic sources, determined in the same manner as the smelter production, was about 897,000,000 pounds, 288,000,000

pounds more than in 1921. The refinery production of new copper obtained from domestic and foreign sources, including the imports of refined copper, was about 1,398,000,000 pounds. In addition to the output of new refined copper, about 112,000,000 pounds of secondary copper was produced at the refineries, making the total output of the refineries about 1,510,000,000 pounds.

Although the new tariff act which went into effect 21 Sept. 1922, placed no duty on copper, it affected the records of the Department of Commerce, in which a line of division was drawn on 21 September, when the new tariff became effective. Up to that date the total imports of copper in ore, concentrates, matte, blister, and refined copper amounted to 363,443,226 pounds, of which 75,556,317 pounds was refined copper and 192,050,397 pounds was blister copper. The exports for the first 10 months amounted to 634,501,851 pounds.

The stocks of refined copper in the hands of domestic refineries on 31 Dec. 1922, as estimated by the refining companies, were about 277,000,000 pounds, compared with 459,000,000 pounds on 31 Dec. 1921. The stocks of blister copper and material in process of refining, in the hands of the smelters, in transit to refineries, and at refineries, on 31 Dec. 1922, were estimated by refining and smelting companies at about 352,000,000 pounds, compared with 283,000,000 pounds on 31 Dec. 1921.

The quantity of primary refined copper withdrawn on domestic account during the year was about 882,000,000 pounds, calculated as follows:

	1921	1922
Refinery production from domestic sources.....	600,000,000	897,000,000
Refinery production from foreign sources, including estimated imports of refined copper.....	411,000,000	501,000,000
Stocks of new refined copper, 1 January.....	659,000,000	459,000,000
	<u>1,670,000,000</u>	<u>1,857,000,000</u>
Exports, including unrefined black blister and converter copper in bars, pigs, and other forms, and refined ingots, bars, rods, etc.....	609,000,000	698,000,000
Stocks, 31 December.....	459,000,000	277,000,000
	<u>1,068,000,000</u>	<u>975,000,000</u>
Total withdrawn on domestic account.....	<u>611,000,000</u>	<u>882,000,000</u>

Much interest was aroused by the announcement on 16 Jan. 1923, that arrangements had been completed by the Anaconda Copper Company, the largest copper-producing concern in the world, to acquire the controlling interest in the Chile Copper Company, which is said to own the largest known body of copper ore in existence. About a year previous, the Anaconda company acquired the American Brass Company, the largest factory in the world for manufacturing and fabricating copper and brass. The financing involved in the deal whereby the Anaconda company secured control of the Chile company, amounted to \$150,000,000. Copper is finding increased use in several valuable alloys that have been developed, notably phosphor copper and manganese copper.

Copper Exports.—Official figures of the

copper exports of the United States for the first 10 months of 1922 show that the total shipments to foreign countries during that period amounted to 609,705,600 pounds, compared with 489,664,000 pounds for the corresponding months of 1921, an increase of 120,041,600 pounds. Shipments in 1922 were also 73,382,400 pounds larger than in the first 10 months of 1920, and 172,455,360 pounds greater than in the corresponding months of 1919. Shipments to Germany, the United States' best foreign customer, in the first 10 months of 1922 were 168,725,760 pounds, and if those to Holland be included, the total takings for German account were 195,784,960 pounds. The total exports to Germany direct in 1921 amounted to 233,072,479 pounds, in 1920 to 89,194,588 pounds, and in 1919 to 6,831,400 pounds. There were no shipments to Germany during 1916, 1917 and 1918. During 1913 exports to Germany were 307,150,761 pounds. In 1913 exports of copper to Germany constituted nearly one-third of the total foreign shipments.

France is the next best foreign customer for American copper. Shipments to that country during the first 10 months of 1922 were 109,621,120 pounds, compared with 98,731,640 pounds for the entire year 1921. England appears as the third largest customer, with takings in the first 10 months of 1922 of 78,438,080 pounds. Copper shipments to the United Kingdom for the year 1921 were 62,334,868 pounds. The Orient took during the first 10 months of 1922 49,029,120 pounds. Foreign consumption of copper made great strides in 1922. World consumption of copper was decidedly on the upgrade at the end of the year and the bulk of the enormous tonnage of war scrap which hung over the market had disappeared.

Copper Consumption.—At the close of 1922 the consumption of copper in the United States was estimated at 130,000,000 pounds a month, figures far in excess of all pre-war records and more than double the consumption for the corresponding months of 1921. Total consumption in the United States in 1921 was 615,000,000 pounds; in 1920, 1,250,000,000 pounds. The estimated consumption in 1922 was at the rate of 1,500,000,000 pounds though, due to unsatisfactory conditions in the early months of the year, it was felt that the final figures probably would show that the consumption for the entire year did not exceed 1,200,000,000 pounds. Automobile manufacturers are estimated to have used 108,280,000 pounds of copper while the building industry consumed approximately 150,000,000 pounds, an increase of more than 100,000,000 pounds as compared with the figures of 1921. At the close of the year 1922 copper was selling at 14.75 cents per pound. In February-March 1917 copper sold at more than 35 cents a pound. On 4 Jan. 1923 the announcement was made that the remainder of the 400,000,000 pounds of copper pledged with the Copper Export Association, to be sold exclusively abroad, would in all probability be liquidated within 90 days. This metal was pledged with the association as collateral for \$49,000,000 notes sold to investors when the organization was formed about three years previous to finance the export copper business, Europe then being unable to pay cash for metal purchased in this country. See also METALLURGY.

COPPER ORES, Leaching of. See METALLURGY.

COPYRIGHT. The copyright question received a large measure of attention during the year 1922. Efforts were made to remove the United States from the unseemly position it occupies before the world. With the exception of Russia, the United States was the only nation of first rank in 1922 that remained outside the International Copyright Union established in 1886 at Berne, Switzerland. The United States was barred from membership in the Union by the presence of certain clauses in its copyright law which ran counter to the basic principles of the Union. The chief of these is the requirement that an English work, in order to secure copyright in the United States, must be manufactured therein, whereas in the Union a single grant of copyright in any country which is a member of the Union is valid without further formality in all countries which are members of the Union. On 28 April, Representative Tincher of Kansas introduced a copyright measure in Congress which had the approval of the authors, printers, publishers and many independent authorities on copyright. This bill provided that copyright protection should be granted to authors of all countries within the Berne Convention from the moment their books are published in their own countries. American books must be deposited and registered at Washington after publication, and books from foreign countries need not be deposited. Should any American publisher arrange to publish in the United States a book of foreign origin he is obliged to deposit and register two copies of the book, the same as for an American book, and foreign editions of books can only be brought into the United States with the consent of the American owner of the copyright. Books of all foreign authorship, for which there is an American publisher, can only be brought into the country by a library or an individual and through the American copyright owner. The bill was opposed by many librarians on the ground that the chief beneficiary under it would be the international publisher. Through membership in the International Union the publisher's issues would have the protection of our laws against piracy, while by complying with the simple formality of a small fee and depositing two copies in Washington, he could qualify as the publisher of an American edition. This would render it impossible for librarians to order London books from London agents and would compel them to deal instead with the American house and to pay its price. It was alleged that those prices in the case of one large American importing house were at the average rate of 38.3 cents a shilling in 1922 when the actual value of the shilling was 22.5 cents. It was also alleged that the new act gave a chance for profiteering to the importers of books from countries with greatly depreciated currencies, notably Germany, and to a less extent, Italy and France. As the result of much consultation and discussion the Tincher Bill was modified and introduced in the Senate by Senator Lodge on 6 December and in the House by Representative Davis. The Lodge-Davis Bill

repeals the manufacturing restrictions entirely but soon after its introduction the printers disapproved of it on the ground that while they were asked to give up the protection of their industries by assenting to the repeal of the manufacturing clauses, the publishers were given equivalent protection in the case of English books. At a conference held on 22 Jan. 1923, the Authors League accepted the plan of the printers for a copyright bill omitting the section in question. This plan as developed in sections 4-7 of the substitute bill introduced by Representative Tincher on 26 Jan. 1923 removed the manufacturing restrictions from books of foreign authorship. Since the bill failed of passage in the Fourth Session of the 67th Congress the Copyright question remains in statu quo ante.

CORBETT, Sir Julian Stafford, English historian: b. Surrey, England, 12 Nov. 1854; d. Stopham, near Pulborough, England, September 1922. From Marlborough, he went to Trinity College, Cambridge, and took a first in the law tripos in 1876 and was called to the bar, Middle Temple, London in 1877. He practised until 1882, when he began to publish romances. In 1896 he accompanied the Dongola Expedition as special correspondent of the *Pall Mall Gazette*. In 1889 he published a biography of 'Monk,' in the 'English Men of Action' series. This was followed by 'Sir Francis Drake' in 1890; 'Drake and the Tudor Navy'; 'History of the Rise of England as a Maritime Power' (1898); 'The Successors of Drake' (1900); and other naval books. 'The Campaign of Trafalgar' (1910), attracted much attention and 'Some Principles of Maritime Strategy' (1911) was accepted as a text-book in the libraries of every man-of-war. In 1903 he was chosen Ford lecturer at Oxford and in 1904 was given the Chesney gold medal. His most considerable service to the Navy Records Society was his edition of 'The Spencer Papers.' He was knighted in 1917. In 1920 he was elected an honorary fellow of Trinity, Cambridge. Sir Julian wrote pamphlets on 'The League of Nations and Freedom of the Seas,' 'The Spectre of Navalism,' and 'The League of Peace and a Free Sea.' He was director of the historical section committee of imperial defense and was official naval historian of the World War, succeeding Sir John Knox Laughton. His first volume appeared in April 1920, and his second volume in November 1921, carrying the history down to the formation of the coalition ministry in May 1915, and the resignation of Lord Fisher and Mr. Churchill. He also published: 'England in the Mediterranean'; 'Fighting Instructions 1530-1816'; 'England in the Seven Years' War'; and 'Signals and Instruction 1778-94.'

CORK CUTTING. According to the Department of Commerce, 45 firms engaged in cork cutting in the United States in 1921 turned out products valued at \$12,968,000, as compared with products valued at \$16,282,000 turned out by 55 establishments in 1919, and products valued at \$7,875,000 turned out by 39 establishments in 1914. The industry includes various articles manufactured from cork, such as bottle corks, life preservers, cork board for insulation, etc.

Persons engaged in the industry, including proprietors, firm members, salaried employees and wage earners, totaled 3,154 in 1921, 4,061 in 1919 and 3,732 in 1914. Salaries and wages paid out amounted to \$3,516,000 in 1921, \$4,415,000 in 1919 and \$1,980,000 in 1914. Materials used cost \$6,773,000 in 1921, \$9,135,000 in 1919 and \$4,751,000 in 1914. Of the 45 establishments which reported products valued at \$5,000 or more in 1921, 25 were located in New York, eight in New Jersey, six in Pennsylvania, three in Illinois, two in Massachusetts and one in Louisiana.

CORN. The 1922 corn crop of the United States, as estimated by the Department of Agriculture in its final report for the year, was 2,890,712,000 bushels, as compared with the 1921 crop of 3,068,569,000 bushels, the 1920 crop of 3,208,584,000 bushels and the five-year average crop for years 1916-20 of 2,830,942,000 bushels. The harvested area for the three years mentioned was 102,428,000 acres in 1922; 103,740,000 acres in 1921 and 101,699,000 acres in 1920. The average yield per acre was placed at 28.2 bushels in 1922, 29.6 bushels in 1921 and 31.5 bushels in 1920. The average farm price of corn on 1 December of the three years mentioned was 65.7 cents per bushel in 1922, 42.3 cents per bushel in 1921 and 67 cents per bushel in 1920. The total farm value of the 1922 crop, based on 1 December prices, was \$1,900,287,000, as compared with \$1,297,213,000, the value of the 1921 crop and \$2,150,332,000 the value of the 1920 crop. In 1922, the crop had an estimated per acre value of \$18.55, as compared with an estimated per acre value of \$12.50 in 1921 and an estimated per acre value of \$21.14 in 1920. Iowa led all States in production in 1922 with an estimated yield of 455,535,000 bushels, as compared with 430,500,000 bushels in 1921 and 473,800,000 bushels in 1920. Illinois was second with 313,074,000 bushels in 1922, compared with 305,966,000 bushels in 1921 and 314,133,000 bushels in 1920. Nebraska was third with 182,400,000 bushels in 1922, compared with 207,732,000 bushels in 1921 and 255,528,000 bushels in 1920. Indiana produced 176,305,000 bushels in 1922, 169,848,000 bushels in 1921 and 195,777,000 bushels in 1920. Missouri produced 175,275,000 bushels in 1922, 182,880,000 bushels in 1921 and 212,672,000 bushels in 1920. Ohio produced 149,097,000 bushels in 1922, 155,185,000 bushels in 1921 and 172,081,000 bushels in 1920. Minnesota produced 131,307,000 bushels in 1922, 156,620,000 bushels in 1921 and 123,300,000 bushels in 1920. Texas produced 114,580,000 bushels in 1922, 156,920,000 bushels in 1921 and 142,662,000 bushels in 1920. South Dakota produced 110,038,000 bushels in 1922, 125,632,000 bushels in 1921 and 109,500,000 bushels in 1920. According to the estimates no other State produced as much as 100,000,000 bushels in 1922, although both Kansas and Wisconsin came close to the mark, the former producing 98,391,000 bushels, compared with 96,748,000 bushels in 1921 and 132,686,000 bushels in 1920; while the latter (Wisconsin) produced 98,300,000 bushels in 1922, 97,482,000 bushels in 1921 and 89,294,000 bushels in 1920. Production in 1922 in the remainder of the principal corn growing States was as follows: Kentucky, 88,060,000 bushels; Tennessee, 75,440,000 bushels; Pennsylvania, 69,212,000 bushels; Michigan, 60,716,000 bushels;

Oklahoma, 57,600,000 bushels; Virginia, 53,312,000 bushels; Georgia, 52,620,000 bushels; Mississippi, 51,065,000 bushels; Alabama, 50,932,000 bushels; North Carolina, 50,520,000 bushels; Arkansas, 45,825,000 bushels; South Carolina, 29,899,000 bushels; Louisiana, 29,002,000 bushels; New York, 28,329,000 bushels; Maryland, 25,400,000 bushels; West Virginia, 20,536,000 bushels; North Dakota, 18,700,000 bushels; Colorado, 18,320,000 bushels; Florida, 10,500,000 bushels; New Jersey, 9,912,000 bushels; Montana, 5,475,000 bushels and Delaware, 5,439,000 bushels. No other State produced as much as 5,000,000 bushels, California coming nearest with 4,176,000 bushels.

Corn Exports.—The exports of corn from the United States during the 1921-22 cereal season were 40 per cent greater than for the same period of the preceding year. During the period mentioned the exports of corn from the United States to France, Belgium, Italy and Spain were five times larger than the pre-war yearly average.

In the following table are shown the amounts of corn exported from the United States to certain specified countries during the cereal year 1921-22:

EXPORTS OF CORN FROM THE UNITED STATES.
(IN THOUSANDS OF BUSHELS.)

COUNTRIES OF DESTINATION	12 months—	
	1920-21	1921-22
Belgium.....	1,196	5,122
France.....	406	3,623
Italy.....	28	2,250
Spain.....	12	2,425
Denmark.....	5,539	6,316
Germany.....	12,560	30,530
Netherlands.....	12,753	25,032
Norway.....	93	1,247
Sweden.....	765	679
Canada.....	57,985	44,795
United Kingdom.....	13,493	27,873
Cuba.....	2,072	2,850
Mexico.....	11,592	4,013
Other countries.....	564	9,248
Total.....	119,058	166,003

During the last cereal year the exports of American corn to Europe were greater than they had been for any 12 months since 1905. During the first six months of the year Europe purchased 100 per cent more corn than was bought during the second six months of the year. The purchases of American corn by countries other than European, on the other hand, were 70 per cent greater during the second half of the year. The months from November to April are the most favorable ones for exports of corn from American ports. After that time, or during the warm months, it is considered safer to ship corn to Europe via Canada, which explains, in a measure, the heavy exports of corn to Canada during the warm months of the year. There can be no doubt that much of the corn which goes to Canada subsequently finds its way into European countries. While our exports of corn to Europe decrease in volume as summer approaches, it is noticeable that the same tendency does not hold with respect to the exports of corn from the United States to Cuba and Mexico.

World Production.—Authentic figures showing the world corn crop of 1922 were not

available, but the crop of 1921 was estimated at 3,710,000,000 bushels, compared with 3,129,000,000 bushels grown in 1917. The European crop of 1922 was estimated by the United States Department of Commerce at 326,000,000 bushels, compared with 404,000,000 bushels in 1921 and the pre-war average of 538,000,000 bushels.

Canned Corn.—Reliable authorities estimated the corn pack of 1922 at approximately 11,420,000 cases, of which about 2,870,000 cases remained unsold on 20 November. The Maryland packing exceeded 1,940,000 cases, while Illinois packing fell but slightly short of that figure. Iowa and Nebraska together packed almost 2,000,000 cases, while Ohio packed over 1,000,000 cases, as did Maine also. See also AGRICULTURE IN THE UNITED STATES.

CORN BORER, European, first found in the United States in 1917, it has so far done little damage to the corn crop except in a few sections where this grain is not of major importance. But it has occupied territory that makes it a constant menace to the great corn-growing region and its steady movement westward indicates that the insect is about to invade the area of most intensive corn production. In anticipation of the need of corn growers for detailed descriptions and information on this pest, the United States Department of Agriculture has issued Farmers' Bulletin 1,294, 'The European Corn Borer and Its Control,' by D. J. Caffrey and L. H. Worthley. The bulletin is intended to supply practical information to corn growers, corn canners, dealers in green vegetables and market and home gardeners.

"When first found in this country," said the Department of Agriculture, in a statement issued 26 Jan. 1923, "the European corn borer had occupied an area of about 100 square miles in the vicinity of Boston, Mass., and in the past five years it has spread over a total area of nearly 7,700 square miles. It is found in Eastern Massachusetts, Southeastern New Hampshire and Eastern New York, and in a narrow belt along Lake Erie in New York, Pennsylvania, Ohio and Michigan. There is an extensive infested area in Ontario, and it may be that fields on the American side of the lake were first infested by insects originating in Canadian fields. The insect is thought to have been brought into New England in 1909 or 1910 in broom corn imported from Hungary and Italy.

"Although in this country corn seems to be its favorite food, the insect also attacks other field crops, vegetables, flowers, large-stemmed grasses, and weeds. It will use any kind of corn as a host, but seems to prefer sweet and flint, with dent corn next in favor, and corn in general is preferred to any other plant grown in this country. Among the garden vegetables, celery, beets, and rhubarb are affected to the greatest extent.

"The damage to corn is done by the larvae, or borers, chiefly in the ears and stalks, but they also tunnel within the tassel, the midrib of the leaf, the brace roots, and the stubble. In addition, the young larvae often feed on the surface of the plant to a slight extent, particularly upon the leaf blades, the tassel buds, the husks and silks, and between the leaf sheath and the stalk. The injury to plants other than corn is

of the same general character as that to corn, except that in some instances special parts of the plants appear to be preferred as food or shelter. . . . There are several insects that may be mistaken for this pest, among them the corn earworm, the stalk-borer, the smartweed borer, the celery stalkworm, the lined stalk-borer, and the larger corn stalk-borer.

"The most conspicuous sign of infestation in a field of growing corn is the breaking over of tassel stalks caused by the boring of the larvae. In some fields as high as 80 per cent of broken tassels have been counted. However, as has been said before, the worms attack most other parts of the plant. The entrance openings are usually marked by collections of white or light-brown sawdust-like material."

The department has established quarantines covering the known infested areas and violations of the regulations bring on severe penalties. In a general way the principal control measures are as follows: Burn, or otherwise destroy, before 1 May of each year, all cornstalks, corncocks, corn stubble, vegetable, field and flower crop remnants, weeds and large-stemmed grasses of the previous year. Remove all remnants of leaves from rhubarb stems before marketing. Keep cultivated fields, fence rows, field borders, roadsides, etc., free from large weeds or large-stemmed grasses. Cut corn close to the ground. Cut and remove sweet-corn fodder from the field as soon as the ears are harvested. Feed direct to the live stock, place in the silo or destroy by burning. Cut and remove field corn from the field as soon as the ears are mature. Feed the stalks to live stock as soon as possible and burn or otherwise dispose of the uneaten parts before 1 May following. Shred or cut the fodder to increase its consumption. Plow under thoroughly in the fall all infested cornstalks, corn stubble, other crop remnants, weeds and similar material which it is impractical to destroy in any other manner. When necessary to adopt this practice, an attempt should be made to plow under all of the material to a depth of at least six inches. Small areas of trap crops may be planted. Other procedures are described in the department's bulletin, copies of which may be obtained without cost from the Department of Agriculture, Washington, D. C. See also ENTOMOLOGY, UNITED STATES BUREAU OF.

CORNELL COLLEGE, a co-educational institution, non-sectarian but under the auspices of the Methodist Church, founded in 1853 and located at Mount Vernon, Iowa. In 1922-23 it had a faculty of 52 members, 782 students, property valued at \$559,000 and an income of \$178,500. Harlan Updagraff, Ph.D., is president-elect.

CORNELL UNIVERSITY, a State co-educational institution of higher learning, founded in 1865 and located at Ithaca, N. Y. In 1922-23 it had a faculty of 788 members, 5,188 students and property valued at \$29,455,786.69. Its income for the fiscal year ending 30 June 1922 was \$5,543,274.38. Livingston Farrand, M.D., LL.D., L.H.D., is president.

COSGRAVE, William T., Irish statesman and president of Dail Eireann: b. Kilkenny, 1880. He received a common school education

and also received a secondary education in one of the colleges of the Irish Intermediate Board. He entered on a business career in Dublin and amassed a considerable fortune. For many years he took an active interest in politics and in 1909 he became a member of the Irish Republican Brotherhood, the secret revolutionary body in Irish politics. In 1909 Mr. Cosgrave was elected a member of the Dublin city council, and served as member of the Dublin Corporation until 1922. He took a prominent part in forwarding the fortunes of the Sinn Fein party. In 1916 his part in the fight of the Irish Volunteers was of sufficient magnitude to bring him to trial on the third day of the field-general court-martial which resulted in the execution of 15 Republican leaders. He was placed on trial 5 May 1916 and received the death sentence which was later changed to penal servitude for life. He was imprisoned until the general amnesty of 1917, when he was released on 17 June. In the autumn of 1917, Cosgrave was elected to Parliament in the Kilkenny by-election for the seat made vacant by the death of Patrick O'Brien, and soon after his election was made treasurer of the Sinn Fein. Following out the policy of the Sinn Fein he did not take his seat. In May 1918 he was selected to accompany the lord mayor of Dublin on the proposed trip to America to lay the case of Ireland's opposition to conscription before President Wilson; but the same month he was arrested and deported to England, remaining there until 1919, when he was returned to Dublin. In March 1920 he was again arrested and deported. For a time, while Lord Mayor Tom Kelly was in Wormwood Scrubs Prison, Cosgrave acted as deputy mayor of Dublin. On his return to Ireland from his final deportation, he became minister of local government in the Dail Eireann. In January 1922 he succeeded in getting adopted a plan to spend £1,000,000 on housing within the year. During the fatal illness of Arthur Griffith, president of Dail Eireann, and the absence of Gen. Michael Collins in the field against the Republicans, most of the work of the Provisional Government fell upon Cosgrave, and the death of these two leaders in August 1922 found him prepared to assume the office of head of the Provisional Government. Mr. Cosgrave at once inaugurated a stern policy against the so-called "Irregulars" or Republicans and his Government had the moral courage to arrest over 2,000 young men who were disturbing the peace of the country. Late in 1922, when the followers of De Valera initiated a policy of assassination of leaders and members of the Provisional Government, President Cosgrave countered by executing several of the rebel leaders, notably Erskine Childers and Roderick O'Connor. President Cosgrave pursued a firm internal policy and his Government weathered more than one economic disturbance in 1922. Under his guidance the new constitution of the Free State was piloted through the Dail and ratified. In December he inaugurated the first government of the Irish Free State—the Provisional Government having come to end automatically on 6 December, and he received Timothy M. Healy, the first Governor-General. At the close of the year his Government was engaged in rounding up the scattered bands of

irregulars, who were devastating the country under the guise of military operations in behalf of the republic. The most important problem awaiting solution in 1923 was the Ulster boundary question. The Bonar Law Government in Great Britain was seemingly willing to let this question go over, as it was friendly to Ulster, while the Nationalists of the counties of Tyrone and Fermanagh were clamoring for inclusion in the Free State. Strikes and other labor disturbances caused further anxiety to the Irish executive but he was fortunate in securing the moral support of the entire Irish hierarchy—ever a potent force in that country.

COSTA RICA, a republic of Central America to the north of Panama and south of Nicaragua. It has an area of 23,000 square miles and is divided into the seven provinces of San Jose, Alajuela, Cartago, Guanacaste, Heredia, Puntarenas and Limon. The population according to the present estimates is 468,373. The last census was taken in 1892. The capital, San Jose, has a population of 39,000. Other cities are Cartago (17,402); Heredia (13,885), and Limon (10,231).

Education.—Primary education is free and compulsory. There are 411 elementary schools with 32,836 pupils and 1,348 teachers. There is a lyceum at San Jose attended by 450 boys and a college for girls with an equal number of students. Other colleges are at Alajuela, Cartago and Heredia. There is a normal school at the last-named city which has over 400 students. There are in the capital faculties of law, medicine, pharmacy and dentistry.

Religion.—The state religion is the Roman Catholic but all denominations are guaranteed full liberty under the constitution. There is an archbishop and one suffragan bishop.

Production.—The two chief products of Costa Rica are bananas and coffee. About 100,000 acres are devoted to the former and the yearly production is about 9,000,000 bunches of nine "hands" and valued at \$3,000,000. Coffee production averaged in 1921 16,000 tons. Indian corn, rice, sugar and potatoes are grown mostly for home consumption. Tobacco and honey are becoming prominent among the country's products in late years. Live stock thrive in the rich pasture lands and the supply is fast increasing. The republic has 400,000 head of cattle, 66,000 horses, 80,000 swine. Gold and silver mining form the second industry of importance. The ores of these metals are for the most part on the Pacific slopes and manganese ore has come to view recently. In the republic there are 3,296 factories; many of these are establishments for the drying of the coffee beans. There are also broom and wooden-ware factories.

Commerce.—The foreign trade of the republic is mostly with the United States. Coffee, bananas, sugar, hides, gold and silver, hardwoods are the principal exports, while flour and cotton textiles form the largest part of the imports. The total foreign trade suffered a decline in 1921 and in 1922, due to the general trade depression throughout the world. It was about \$23,000,000 in the latter year, of which amount the imports were two-fifths.

Finance.—The chief sources of Government revenue are land taxes, customs dues, liquors,

railways, post office, telegraphs, etc. The total revenue in 1921-22 was \$7,875,600. In the same fiscal year the expenditures were slightly greater than this amount. The largest item of expenditure was for the public debt service, which amounted to \$1,265,430. The 1922 deficit amounted to 657,115 colones. The 1923 budget provides for estimated revenues and disbursements of 20,218,518 colones (4.50 colones = \$1.00).

Communications.—There are 402 miles of railways, part of which is state-owned and part by the United Fruit Company. There are about 35 miles of roadways suited to motor traffic. With a seacoast on both the Caribbean and the Pacific, the republic is accessible through its port of Limon on the former, from ports of the United States, Europe, the West Indies and South America. Excellent service is maintained by the United Fruit Company from Boston, New York and New Orleans. On the Pacific side, Puntarenas is the principal port and is in communication with Panama and other West Coast ports. Regular steamer service from Colon, Panama, to Limon is well established. San Jose, the capital, 104 miles inland from the Caribbean, is connected by rail with both Limon and Puntarenas.

Government.—There is universal suffrage for all males who are self-supporting and under no civil disability. The President, elected for a term of four years has executive authority. Legislative authority is vested in a House of Representatives called the Constitutional Congress, with 43 deputies, or one to every 8,000 inhabitants. Voting is public. The President is assisted by six secretaries of state, who are his appointees and are responsible to him. The President in 1922 was Don Julio Acosta Garcia, who assumed office 8 May 1920 for a period of four years.

History.—On 20 Jan. 1922 President Acosta approved a change in article 3 (relating to payment of the tax for remitting funds) of the postal treaty of 9 Nov. 1899 between France and Costa Rica. On 21 January, at San José plenipotentiaries of the United States and Costa Rica signed a treaty for the extradition of criminals, and in due course President Acosta submitted it to the Costa Rican Congress for approval. On 22 February the Senate of the United States ratified that treaty. On 28 March the Costa Rican students who were awarded the 10 scholarships given by the Mexican Government arrived in Mexico City to take up their studies. On 17 May Congress approved, and on 23 May President Acosta signed, the arbitration convention with Great Britain (dating from 12 Jan. 1912 and naming as arbitrator the Chief Justice of the United States) in the matter of the Aguilar-Amory contract concessions and the Royal Bank of Canada's payment of a check drawn by the Tinoco Administration on the Banco Internacional of Costa Rica. On 19 May was promulgated a law, immediately effective, providing for the unification of the paper currency of Costa Rica and the withdrawal from circulation of the bills of the defunct Banco Comercial. Next day, President Acosta signed Decree No. 8, establishing an office of control of expenditure of Government funds, which

should have general supervision of the Government's financial affairs. On 3 June Joaquín Aguilar Guzmán, Justice of the Court of Appeals since 1919, died in San José. The extradition treaty between the United States and Costa Rica, having been ratified by the Costa Rican Congress, was signed by the executive 12 June. On 1 July Costa Rica, by the opening of new cable facilities, was placed in telegraphic communication with nearly all American and European nations; and at the opening of the cable announcement and congratulatory messages were sent and received within a few minutes between Costa Rica and Washington. On 20 July President Acosta ratified the Pan American postal convention regarding parcel post, with its protocol, and also the Pan American convention in respect to money orders. On 14 September the *Diario de Costa Rica* stated that Great Britain had approved the convention providing for arbitration of the Royal Bank of Canada and Amory claims (that is, the Alvarado-Bennett convention, as amended by the Congress of Costa Rica). Toward the end of the year announcement was made that Mexico, as a part of its government's plan to increase friendly relations with Central America, would establish a consulate in the city of San José. And, as part of the rapprochement of the Central American states, Costa Rica established a legation in the Republic of Guatemala. See also CENTRAL AMERICAN CONFERENCE.

COST OF LIVING. See LIVING, COST OF.

COTTON. The 1922 cotton crop of the United States (exclusive of linters) was estimated by the Department of Agriculture in its final ginning report, issued 20 March 1923, at 9,761,817 bales of 500 pounds each, gross weight, or 202,183 bales below the December forecast. Each bale, it was stated, was estimated to contain 478.4 pounds of lint and 21.6 pounds of bagging and ties. With the single exception of the 1921 crop, which amounted to but 7,953,641 bales, the crop of 1922 was the smallest raised in the United States in 21 years. Production in 1920 amounted to 13,439,603 bales; in 1919 to 11,420,763 bales; in 1918 to 12,040,532 bales; in 1917 to 11,302,375 bales; in 1916 to 11,449,930 bales; in 1915 to 11,191,820 bales. The five-year average production for 1916-20, inclusive, was 11,930,641 bales. The following table shows the ginning returns for 1922-23 by States compared with preceding seasons:

	1922-23	1921-22	1920-21	1919-20
Alabama.....	819,870	579,065	670,721	716,655
Arizona.....	44,132	45,323	104,853	58,472
Arkansas.....	1,010,428	796,863	1,177,095	867,177
California.....	28,473	34,109	77,443	59,082
Florida.....	27,428	10,905	19,194	17,317
Georgia.....	735,874	787,052	1,446,577	1,678,758
Louisiana.....	345,407	278,805	388,625	303,035
Mississippi.....	985,787	812,867	897,733	950,007
Missouri.....	139,881	69,931	74,332	62,667
North Carolina.....	878,997	776,206	936,582	857,253
Oklahoma.....	637,003	481,286	1,287,689	1,002,178
South Carolina.....	517,601	754,551	1,639,470	1,462,277
Tennessee.....	385,860	301,940	313,747	301,408
Texas.....	3,125,752	2,197,644	4,130,197	2,960,335
Virginia.....	27,011	16,368	20,844	23,076
Others.....	19,544	8,715	12,673	4,935

The census estimate on the crop of 1922 compares as follows with the census estimate of

preceding crops. Figures represent bales of 500 pounds, excluding linters:

1922.....	9,761,817	1916.....	11,449,930
1921.....	7,953,641	1915.....	11,191,820
1920.....	13,439,603	1914.....	15,934,649
1919.....	11,420,763	1913.....	14,032,792
1918.....	12,040,532	1912.....	13,529,303
1917.....	11,302,375	1911.....	15,603,850

Linters.—The cotton reports of the United States Department of Agriculture do not include linters which are a product obtained at oil mills from the seed. The average annual production of linters for the five years, 1916–20, was about 7.4 per cent as much as the lint production. It would seem safe, therefore, to estimate the American linters' crop of 1922 at around 500,000 bales.

Acreage and Value.—The cotton acreage of the United States in 1922 was 33,742,000, as compared with 30,509,000 acres in 1921 and 35,878,000 acres in 1920. The average yield per acre in 1922 was 141.6 pounds as compared with 124.5 pounds in 1921 and 178.4 pounds in 1920. The total farm value of the 1922 crop, based on the 1 December prices, was \$1,192,461,000, compared with \$643,933,000 in 1921 and \$933,658,000 in 1920. The value per acre was \$35.21 in 1922, \$21.05 in 1921 and \$26.02 in 1920. The following table shows the cotton acreage, yield per acre and value of the crop per acre for the year 1922, compared with 1921:

COTTON ACREAGE, YIELD AND PER-ACRE VALUE
1922–1921.

STATE	Acreage		Yield per acre		Value per acre, basis 1 Dec. price	
	1921	1922	1921	1922	1921	1922
	1,000 acres	1,000 acres	Lbs.	Lbs.		
Virginia.....	34	53	230	225	\$37 72	\$51 75
North Carolina.....	1,403	1,626	264	250	43 30	61 25
South Carolina.....	2,571	2,058	140	123	22 40	29 89
Georgia.....	4,172	3,466	90	100	14 94	23 90
Florida.....	65	124	80	97	14 40	22 31
Alabama.....	2,235	2,810	124	142	19 84	34 08
Mississippi.....	2,628	3,078	148	157	24 57	37 84
Louisiana.....	1,168	1,185	114	144	17 10	34 56
Texas.....	10,745	12,125	98	130	15 78	30 55
Arkansas.....	2,382	2,814	160	175	25 76	41 30
Tennessee.....	634	1,007	228	190	36 48	46 55
Missouri.....	103	198	325	360	48 75	77 40
Oklahoma.....	2,206	2,951	104	103	16 02	23 69
California ¹	140	203	258	200	43 86	52 00
Arizona.....	90	100	242	200	65 34	60 00
Other.....	18	36	231	200	46 20	50 00
United States.....	30,509	33,742	124.5	141.6	\$21 05	\$35 21

¹ Lower California (85,000 acres in 1921, and 122,000 acres in 1922) included in California figures but excluded from United States totals.

Boll Weevil.—To a very large extent the short American cotton crop of 1922, like the even shorter crop of 1921, was due to the ravages of the boll weevil, which now infests over 90 per cent of the cotton area of the country. Experts of the Department of Agriculture estimate the cotton destroyed in the United States by this pest in 1921 at 6,277,000 bales, while it is believed to have wrought equally as great havoc in 1922. "The economic burden of the boll weevil to cotton producers," said the Department

of Agriculture, "can be made more understandable perhaps by comparisons. For example, the picked crop of cotton lint was 7,954,000 bales in 1921, and the weevil prevented the production of 6,277,000 bales. Hence the damage to the crop was equal to 79 per cent of the harvested crop. Had the weevil been innocuous, the cotton acreage of 1921, small as it was, would have produced 14,231,000 bales of lint cotton." In the 13 years from 1909 to 1921 inclusive, the boll weevil is estimated to have destroyed 28,776,000 bales of cotton, or a yearly average of 2,214,000 bales. Assuming that this pest caused as much damage in 1922 as it was estimated to have caused in 1921, the total amount of American cotton destroyed by it since 1909 would be approximately 35,000,000 bales. The following table based on an Associated Press Dispatch and reproduced from *The Literary Digest* of 16 Sept. 1922 shows by years, from 1909 to 1921, the cotton produced, damage of all kinds to the crop and the damage attributed to the boll weevil.

COTTON PRODUCTION AND DAMAGE, 1909–1921.

YEAR	Weevil damage	All damage	Crop produced
1921.....	6,277,000	10,712,000	7,954,000
1920.....	4,595,000	8,955,000	12,987,000
1919.....	2,780,000	8,825,000	12,421,000
1918.....	1,325,000	9,136,000	12,041,000
1917.....	2,095,000	8,954,000	11,302,000
1916.....	2,994,000	9,505,000	11,450,000
1915.....	1,983,000	7,346,000	11,192,000
1914.....	1,381,000	5,937,000	16,135,000
1913.....	1,579,000	7,937,000	14,156,000
1912.....	714,000	7,143,000	13,703,000
1911.....	388,000	6,893,000	15,693,000
1910.....	1,297,000	8,702,000	11,609,000
1909.....	1,368,000	9,369,000	10,005,000
13 years.....	28,776,000	109,414,000	160,648,000
Yearly average.....	2,214,000	8,416,000	12,358,000

As described in a report of the United States Chamber of Commerce, the boll weevil is about one-fourth of an inch in length and one-eighth of an inch in width, or about the size of a common house fly. Coming originally from a tropical climate, it displays most remarkable adaptations to change of environment. It passes the winter in its adult state and lives entirely without food, seeking such shelter and protection as are afforded in stored cotton seeds, barns, hay stacks, fence rows, hedges, brush piles and the like. The period of hibernation depends upon the weather, and the weevil does not emerge from its hiding place until the young cotton begins to show above the ground. The insect then immediately attacks the young cotton for food. Cotton, in fact, so far as is known, is the only food of the weevil. In the effort to exterminate the boll weevil, spraying with calcium arsenate seems to have given the best result. Unfortunately this article is scarce and expensive. About 8,000 tons were used last year, and it is estimated that the demand in 1923 will be for at least twice as much. According to the United States Geological Survey, the arsenic plants in the United States have a producing capacity of 18,300 tons of white

arsenic annually, but their actual output must depend largely on the plans of the two smelting companies that contemplate reducing ores and speiss directly for their arsenic content. The present demand for arsenic amounts to about 12,000 short tons a year; whereas, the available supply in 1921 from both domestic production and imports amounted to only 6,455 tons. It is manifest, therefore, that unless the production of white arsenic is increased, the demand for calcium arsenate (which contains 40 per cent of refined arsenic) for boll weevil extermination in 1923 will exceed the supply. There was much interest during the year in the announcement that a new method of reducing the boll-weevil injury to short staple cotton had been worked out at the Florida Experiment Station. This method consists in stripping off the square in May and immediately treating the plant with calcium arsenate. On 23 Nov. 1922, the Department of Agriculture indicated its faith in the possibility of conquering the boll weevil by the Florida method, by recommending to the Association of Land Grant Colleges that experimental application of the plan be made in each of the cotton-belt States. Under boll weevil conditions, the prime necessity is to mature the largest crop in the shortest possible time. To accomplish this end, the department made a number of recommendations, concluding by saying: "If weevils are numerous at the time cotton is beginning to square, destroy all possible adult weevils either by hand picking or poisoning, as may be most practicable. It is probable that only at this stage can the molasses and calcium arsenate mixture be used effectively. When squaring begins, pick and destroy all squares from the ground and the stocks once every week or 10 days for a period of about 30 days. Then, if weevils are still numerous or if as much as 10 or 15 per cent of the squares are infested, and other conditions warrant, apply the calcium arsenate dry dust poison. In the fall, as rapidly as possible, kill all cotton stocks, preferably by cutting and plowing under. The object is to destroy the food supply and breeding places of the weevil before the hibernation period." In connection with the effort to exterminate the boll weevil see the article Entomology, United States Bureau of. While the boll weevil was largely responsible for the fact that only 9,964,000 bales of cotton were picked in the United States in 1922, there were nevertheless other contributing causes. In some places in the cotton belt, notably in Georgia, there were droughts and heavy abandonment of acreage under cultivation. Early killing frosts occurred in parts of Texas. All operated to produce a situation that is extremely alarming. One of the most interesting and illuminating discussions of the whole subject appeared in a market letter issued early in January 1923 by J. W. Jay & Co., cotton brokers of New York City.

"Fifty years ago," says the Jay review, "America was raising 3 and 4 million bales of cotton annually on 10 million acres under cultivation. A decade later production had increased to 7 million bales on 15 million acres.

The first 9 million bale crop came thirty years ago when the area planted had risen to 20 million. With the overflowing of the Mississippi river in 1897 the yield was increased to 11¼ million for two successive seasons, during which the area planted was about 25 million acres. More and more land came under cultivation and in 1904 a crop of 13 million bales was produced on about 32 million acres. In 1911 production had increased to 16 million bales on nearly 37 million acres devoted to cotton production. During the five years from 1911 to 1915, the cotton acreage averaged about 35½ million and the yield averaged 14½ million bales. During the past five years, however, the average yield has amounted to but 11¼ million bales on practically 34½ million acres. In these past five years American cotton crops have averaged only 750,000 bales more than in the five years at the end of the last century, though each year has averaged more than 9,000,000 acres under cultivation in excess of the average acreage of twenty years ago.

"As a result of the steady increase in production from the early 70's to 1915, the use of cotton expanded proportionately until consumption during the three years previous to the World War averaged 14½ million bales. Luxuries of a half century ago have become necessities so that failure on the part of the South to maintain its annual output of cotton has at length created an alarming situation in the world's cotton industry. Not only have spindles increased from 124 million fifteen years ago to 153 million in 1919, but cotton has been put to a variety of uses extremely difficult to suspend. During recent years there has been no expansion in Egyptian and Indian growths which would counterbalance this decline in production in America. Nor as regards either price or quantity is it possible to consider wool or silk as likely to furnish a way out of the difficulty. In the case of copper or steel a rising price is a sufficient incentive to production to increase the supply automatically to meet the demand. But the cotton world appears to be facing the most serious problems presented since the Civil War. Even with drastic curtailment of consumption during the current season, there is every indication that on 1 Aug. 1923 reserves will be reduced to the lowest levels of this generation.

"Twenty years ago that a remunerative price to the planter could be considered a safe guarantee of a sufficient crop, to restore the balance between supply and demand, was common reasoning. But the record of the past five seasons reveals unmistakably that no similar conclusions are warranted today. The cause of the present lack of confidence is found in the presence of boll weevil throughout the cotton belt. Though up to 1900 these insects had hardly gotten beyond the limits of Texas, each year has brought a larger and larger extension until the Department of Agriculture estimates that over 600,000 of the 700,000 square miles in the cotton producing region are now infested. Thus far no successful means of extermination have been discovered. Experiments in the use of calcium arsenate under the Bureau of Entomology and tested at the laboratory in Louisi-

ana, have shown the greatest degree of success yet obtained. But the quantity of this insecticide available for use and the amount of labor involved in using it, is such that several years must elapse before this method of counteracting the effects of weevil damage can become sufficiently general to warrant hopes of a substantial increase in the yield per acre.

"That what amounts to virtually a revolution in American cotton production has been going on the past few years, is evident from developments in the Atlantic States. In the record year of 1914, Georgia raised 2,700,000 bales and in 1911 2,800,000 bales. The Department of Agriculture estimates the Georgia yield this year at 725,000 bales. In 1914 production in South Carolina aggregated 1,400,000 bales and in 1911 1,700,000 bales. The 1922 crop is placed at 530,000 bales. What happened in Louisiana, cutting former crops in that State in half, appears to be taking place in other sections of the belt. The era of the big plantation seems to have passed, bringing a change which each year makes more apparent. Discouraged over the havoc wrought in their fields by the boll weevil, small farmers and tenants have abandoned their acres. Conditions in both the States have grown appreciably more serious the past two years. A frequent sight in the smaller towns in Georgia is the wagon with its household effects trekking through. What with abnormal vicissitudes of agriculture on the one hand and the lure of the high wages in industrial centers on the other, farming conditions are not those of fifteen or twenty years ago.

"One conclusion seems inevitable. The world must be clothed. If America is no longer equal to the task other countries will eventually discover the means of filling the gap. Experiments in cotton culture are now being made in South America, Africa and Australia, but thus far without that success necessary to encourage hopes of a supply commensurate with requirements. The South is not likely to surrender its supremacy without a struggle in which every quality of American ingenuity will attempt to overcome these obstacles of nature. The fight now being waged is attracting the attention of the entire Eastern and Western world, for since Adam and Eve left the garden, mankind has not been indifferent to raiment. The year 1923 promises, therefore, to be unique in cotton history. Last year reserves of American cotton were drawn down nearly $4\frac{1}{2}$ million bales. The current season promises to deplete them 2 to $2\frac{1}{2}$ million bales more. This makes imperative a yield of $12\frac{1}{2}$ to $13\frac{1}{2}$ million bales, or there will ensue a crisis in the world's cotton industry beyond the ability of the imagination to visualize."

World Production.—According to a report of the United States Department of Commerce, the world produced during the 1922-23 season 17,664,000 bales of cotton of 478 pounds net weight. This was an increase of 2,923,000 bales over the world crop of 1921-22 which amounted to 14,741,000 bales. In 1921-22 the United States, as shown above, produced 9,964,000 bales. British India produced 3,750,000

bales; Egypt, 1,050,000 bales; China, 1,500,000 bales; Brazil, 545,000 bales and all other countries 855,000 bales. Exclusive of Mexico, the cotton area in 1922-23 was estimated by the Department of Agriculture at 57,106,000 acres or 5,044,000 acres more than the 1921-22 area and 2,736,000 acres less than the average area for the five years, 1909-13.

Cotton Prices.—From the standpoint of the prices, the outstanding feature of the cotton industry during the year 1922 was the upward swing from about 19 cents a pound in the late spring, when the new crop was just getting under way, to a fraction more than 27 cents a pound at New York on 27 December. Not since September 1920 when the price of the staple began its long decline from 43.75 cents a pound to slightly less than 11 cents a pound in June 1921 had cotton sold at such a high price. A threatened shortage of the commodity, due to the small crop of 1922 and the still smaller crop of 1921, apparently was responsible for the sensational increase in price. The season's highest average price of middling cotton in the 10 spot markets designated in the table given below was 26.57 cents a pound, touched, as was the high point in the New York market, on 27 December. On that day both March and May future contracts on the

CLOSING FUTURE PRICES FOR 29 DECEMBER AND FOR THE CORRESPONDING DAYS IN 1921 AND 1920.

MONTH	New York			New Orleans		
	1922	1921	1920	1922	1921	1920 ¹
	Cents	Cents	Cents	Cents	Cents	Cents
January.....	26.42	19.07	14.34	26.33	18.10	12.91
March.....	26.65	18.95	13.69	26.32	18.15	13.06
May.....	26.67	18.50	13.85	26.30	17.93	13.32
July.....	26.38	18.00	14.00	26.02	17.55	13.48
October.....	24.60	17.18	14.09	24.30	16.72	13.54

¹ December 30.

DAILY CLOSING QUOTATIONS FOR MIDDLING SPOT COTTON AT 10 SPOT MARKETS FOR THE WEEK ENDING 29 DECEMBER.

MARKET	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
	Cents	Cents	Cents	Cents	Cents	Cents
Norfolk.....	(1)	26.81	26.81	26.69	26.69	(1)
Augusta.....	(1)	26.81	26.88	26.81	26.81	(1)
Savannah.....	(1)	26.90	26.90	26.80	26.80	(1)
Montgomery.....	(1)	26.00	26.13	26.00	26.00	(1)
New Orleans.....	(1)	26.25	26.50	26.50	26.50	(1)
Memphis.....	(1)	26.75	26.75	26.75	26.75	26.75
Little Rock.....	(1)	26.25	26.50	26.50	26.50	(1)
Dallas.....	(1)	26.00	26.00	25.90	25.90	(1)
Houston.....	(1)	26.55	26.65	26.55	26.55	(1)
Galveston.....	(1)	26.55	26.55	26.45	26.45	(1)
Average.....	.....	26.49	26.57	26.50	26.50	.....

¹ Holiday.

New York Cotton Exchange passed the 27 cent level, March contracts reaching 27.02 cents per pound and May contracts 27.10 cents per pound. On 29 December (30 December was a holiday in nearly all markets) the average price of

middling cotton in the 10 designated spot markets was 26.50 cents per pound, compared with 26.04 cents at the close of the previous week and 18.37 cents on the corresponding day in 1921. January future contracts on the New York Cotton Exchange advanced 46 points during the week, closing at 26.42 cents. January contracts on the New Orleans Cotton Exchange advanced 45 points, closing at 26.33 cents.

The following table gives the spot quotations for middling upland cotton at New York on 29 December for each of the past 32 years.

	Cents		Cents		Cents
1891	7.75	1902	8.85	1913	12.60
1892	9.88	1903	13.70	1914	7.80
1893	7.81	1904	6.85	1915	12.20
1894	5.75	1905	11.90	1916	17.25
1895	8.25	1906	10.65	1917	31.85
1896	7.06	1907	11.80	1918	32.30
1897	5.94	1908	9.30	1919	39.25
1898	5.88	1909	15.95	1920	15.00
1899	7.69	1910	14.95	1921	19.10
1900	10.31	1911	9.25	1922	26.60
1901	8.50	1912	13.20		

Continuing its sensational upward climb, on 24 Jan. 1923 cotton (that is, actual cotton) sold on the New York Cotton Exchange at 28.63 cents a pound. On the same date, January futures sold at 28.85 cents, March futures at 28.87 cents, May futures at 29.05 cents, July futures at 28.79 cents, while October cotton futures (1923-24 crop) sold on the same date at 26.77 cents a pound, which were the maximum prices recorded up to 1 Feb. 1923.

Cotton and Cotton Cloth Exports.—According to the United States Department of Commerce, the exports of raw cotton, including linters, from the United States during 1922 totaled 6,113,813 bales, compared with 6,474,105 bales exported in 1905. Exports of cotton cloths during 1922 totaled 587,760,838 square yards, compared with 551,512,942 yards exported in 1921. The following table compiled by the Department of Commerce shows the exports of cotton and cotton cloths from the United States during 1921 and 1922:

EXPORTS OF COTTON AND COTTON CLOTHS 1921-22.

	1921	1922
Raw cotton, including linters, bales	6,474,105	6,113,813
Value	\$534,241,795	\$673,249,613
Cotton duck, square yards	7,427,492	11,119,685
Value	\$3,480,415	\$4,360,753
Other cotton cloths:		
Unbleached, sq. yds.	218,367,315	177,262,351
Value	\$19,669,270	\$19,298,203
Bleached, sq. yds. ¹	83,676,191	99,681,739
Value	\$11,702,965	\$13,871,473
Printed, sq. yds. ¹	90,327,326	113,319,448
Value	\$10,575,416	\$14,802,468
Piece dyed, sq. yds. ¹	83,913,351	101,465,806
Value	\$15,505,740	\$18,110,810
Yarn dyed, sq. yds. ¹	67,801,267	84,911,809
Value	\$10,640,069	\$14,789,205
Total cotton cloths, sq. yds. ¹	551,512,942	587,760,838
Value	\$71,573,875	\$85,232,912

¹ Quantity stated in yards prior to January, 1922.

The largest monthly export of cotton since the war was 929,671 bales in January 1920; the smallest, 146,668, in September 1920.

Cotton cloths exported from the United States during the fiscal year that ended 30 June 1922 totaled 613,000,000 yards compared with 556,000,000 yards exported during the preceding year and 415,000,000 yards exported during the fiscal year 1914. However, despite the big increase in the yardage exported in 1922 over the 1921 exports, the value of the 1922 shipments was but \$77,000,000 against \$141,000,000 for 1921. In other words, while exports increased 10 per cent in quantity in 1922, there was a decrease in the value of these exports of 45 per cent as compared with the exports of the previous year. The average price of the cotton cloths exported in 1922 was 12.5 cents a yard against an average of 25.4 cents a yard in 1921. Increased shipments to the Orient account for the greater part of the general increase in cotton cloth exports during 1922. China alone took over 30,000,000 yards in 1922 against 12,000,000 taken in 1921, while shipments to the Philippines were 87,000,000 yards in 1922 against 43,000,000 yards in the previous year. To Asia and Oceania as a whole shipments in 1922 were 162,000,000 yards compared with 96,000,000 yards in 1921. Shipments to Europe totaled 40,000,000 yards in 1922 against 20,000,000 yards in 1921 and shipments to South America, 115,000,000 yards in 1922 against 124,000,000 yards in 1921. The one grand division which showed a marked decline in the quantity of cotton cloth imported from the United States was North America to which shipments in 1922 totaled but 239,000,000 yards against 279,000,000 yards in 1921. Practically all of this fall-off occurred in the shipments to Cuba which were but 30,000,000 yards in 1922 compared with 90,000,000 yards in 1921. The figures given are exclusive of about 50,000,000 yards for which no destination had been shown at the time this article was written. Commenting upon the foregoing figures, the *Trade Record*, of the National City Bank of New York, which supplied them, asserts that the increase in exportation which they show, notwithstanding the decline in the price of cotton goods, are indicative of the steady gains which the cotton manufacturers of the United States have made in the distribution of their products to other parts of the world. During the decade which ended with 1910 cotton cloth exports from the United States averaged a little over 400,000,000 yards a year and were but 415,000,000 yards in 1914. During the World War they showed a rapid increase, averaging about 700,000,000 yards a year during the four years ending with 1920. By that time the European manufacturers, whose production had fallen off during the war, again began to be active with the result that American exports dropped to 556,000,000 yards the succeeding year. British exports of cotton cloth are still far ahead of the exports of the United States but while those of the last-mentioned country have increased 48 per cent since 1914 those of Great Britain have declined from over 7,000,000,000 yards in 1913 to approximately 3,000,000,000 yards in 1921.

Cotton Consumption.—With an estimated average world production of 16,000,000 bales, the United States Department of Commerce in a review published 13 Nov. 1922 estimated the annual consumption of cotton at 20,000,000 bales. That is why world stocks, asserts the Department of Commerce, were 5,000,000 bales less on 1 Aug. 1922 than they were on 1 Aug. 1921, and why they will diminish 3,000,000 bales more by the end of the current cotton year (1 Aug. 1923) if consumption continues at the present rate. In the review of the cotton situation referred to the Department of Commerce said: "Up to about 1915 or 1916 the world was consuming nearly 21,000,000 bales and producing not much more, with, of course, considerable yearly variations. For four or five years both production and consumption dropped, averaging about 19,000,000 bales. For the last 18 months consumption has been going up and the world is now consuming apparently better than 20,000,000 bales, while production is low, averaging for the last two years about 16,000,000 bales. In other words, at the rate of consumption for the last cotton year, which has continued so far this year, cotton is being consumed about 4,000,000 bales faster than it is being produced. This can be shown by the carry-over. On 1 Aug. 1921 the world carried over 14,000,000 bales; on 1 Aug. 1922 a little over 9,000,000 bales. If the present rate of consumption keeps up until next August, the carry-over will be not much over 6,000,000 bales, or a little less than the annual average

ply and estimated distribution of American and all kinds of cotton (including American) for the years ended 31 July 1922 and 1923.

On 12 Feb. 1923 the Department of Commerce announced the completion, through its foreign and domestic staff, of its cotton summary for the world. This summary shows that on 31 July 1922 the world stock of American cotton was 5,123,000 bales and world stocks of all kinds of cotton (including American) were 9,536,000 bales. Adding the 1922-23 season's production of 9,761,817 bales of American cotton and 17,461,817 bales of all kinds, the result is a total supply for the season of 14,884,817 bales of American and 26,997,817 bales of all kinds. This is less by about 2,400,000 bales of American and the same amount of all kinds of cotton than the supply for 1921-22. From this total supply subtract the estimated consumption for the year 1922-23 of 12,312,000 bales of American and 20,579,000 of all kinds of cotton and the indicated carry-over on 1 Aug. 1923 is only 2,572,817 bales of American and 6,418,817 bales of all kinds. That is, the stocks of American cotton will have diminished over 6,775,000 bales and stocks of all kinds, over 8,300,000 bales within only two years, and will have reached an abnormally low total.

The trend of world supplies is shown more clearly by taking from the foregoing table the estimated world carry-over for the three years:

WORLD STOCKS OF COTTON, 1 AUG. 1921, 1922 AND 1923.

WORLD'S SUPPLY AND DISTRIBUTION OF COTTON, 1921-22, WITH ESTIMATES FOR 1922-23

ITEMS	American	All kinds
	<i>Bales</i>	<i>Bales</i>
Stocks 1 August 1921.....	9,351,000	14,752,000
Production (commercial cotton) ¹ , 1921.....	7,954,000	14,741,000
Total supply, 1921-1922.....	17,305,000	29,493,000
Consumption, 1921-1922.....	12,293,000	20,047,000
Stocks 31 July 1922 ²	5,123,000	9,536,000
Production (commercial cotton), 1922.....	9,761,817	17,461,817
Total supply, 1922-1923.....	14,884,817	26,997,817
Consumption, 1922-1923 (estimate).....	12,312,000	20,579,000
Apparent stocks, 31 July 1923 (by deduction).....	2,572,817	6,418,817

¹ This represents actual crops except in China and India, where the cotton that enters into household consumption is excluded from the total as being of little commercial interest.

² Total compiled from actual stocks reported in different parts of the world. The apparent stocks, arrived at by deducting the consumption from the total supply, were 5,012,000 bales of American and 9,446,000 bales of all kinds of cotton. For the items making up the total stocks reported on 31 July 1922, see *Commerce Reports* for 13 Nov. 1922.

³ Corrected in accordance with final ginning returns (20 March 1923).

before the war. There will be, of course, no shortage of cotton within another year, but the future depends on the rate of consumption and the size of the cotton crop in 1923-24."

The above table shows the world's sup-

DATES	American	All kinds
	<i>Bales</i>	<i>Bales</i>
1921.....	9,351,000	14,752,000
1922.....	5,123,000	9,536,000
1923.....	2,775,000	6,651,000

¹ Estimated.

Production and Consumption by Countries, 1922-23:

The following figures relating to the world cotton production and estimated cotton con-

WORLD'S COTTON PRODUCTION FOR 1921-22 AND 1922-23 AND CONSUMPTION FOR 1922-23.

COUNTRIES	Production, 1921-22	Production, 1922-23	Consumption, 1922-23	
			American	All kinds
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
U. S.....	7,954,000	9,761,817	6,150,000	6,400,000
Europe:				
U. King'm			2,100,000	3,100,000
Continent.....	(²)	(²)	3,167,000	4,523,000
British India	3,360,000	3,750,000	20,000	1,950,000
Egypt.....	837,000	1,050,000		(²)
Japan.....	(²)		600,000	2,500,000
China.....	1,175,000	1,500,000	(²)	(²)
Brazil.....	612,000	545,000		(²)
All other countries..	803,000	855,000	275,000	2,106,000
Total.....	14,741,000	17,461,817	12,312,000	20,579,000

¹ Corrected in accordance with final ginning returns (20 March 1923).

² Included in all other countries.

sumption by countries for the 1921-22 and 1922-23 seasons were compiled by the bureau of Foreign and Domestic Commerce, Department of Commerce, in co-operation with the Bureau of the Census of the same department and the Bureau of Agricultural Economics, Department of Agriculture. All quantities are shown in bales of 478 pounds net weight. The production and consumption of linters have not been included in the figures.

Estimated Consumption, 1922-23, Compared with Preceding Years:

The world's consumption of cotton during the years ended 31 July 1920, 1921, 1922, and estimated consumption for the year ending 31 July 1923, are shown by principal consuming countries in the following table:

WORLD'S CONSUMPTION OF COTTON, 1919-20, 1920-21, 1921-22, AND ESTIMATED CONSUMPTION IN 1922-23.

COUNTRIES	1919-1920	1920-1921	1921-1922	1922-1923
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
United States.....	6,485,000	4,906,000	5,904,000	6,400,000
Europe:				
United Kingdom.....	3,870,000	2,134,000	2,948,000	3,100,000
Continent.....	3,828,000	4,602,000	4,823,000	4,523,000
India.....	1,722,000	1,925,000	1,947,000	1,950,000
Japan.....	1,909,000	1,883,000	2,275,000	2,500,000
All other countries.....	1,486,000	1,464,000	2,150,000	2,106,000
Total.....	19,300,000	16,914,000	20,047,000	20,579,000

The following table shows the world production and consumption of cotton from 1908-09 to 1922-23 (estimated), and European consumption for the same years. It will be seen that even with the increase in the last two years European consumption is only 70 per cent of the pre-war average, while world consumption is almost back to normal.

WORLD COTTON PRODUCTION AND CONSUMPTION FOR THE YEARS INDICATED.
(In Bales of 478 Pounds Lint.)

YEARS	World production	World consumption	European consumption
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
1908-1909.....	20,604,000	20,289,000	10,968,000
1909-1910.....	16,988,000	19,164,000	10,295,000
1910-1911.....	18,856,000	19,888,000	11,040,000
1911-1912.....	22,247,000	21,534,000	11,998,000
1912-1913.....	21,550,000	22,533,000	12,117,000
1913-1914.....	22,612,000	22,199,000	12,029,000
1914-1915.....	24,861,000	20,670,000	10,606,000
1915-1916.....	18,461,000	21,978,000	10,878,000
1916-1917.....	18,924,000	21,108,000	9,044,000
1917-1918.....	18,141,000	18,515,000	6,621,000
1918-1919.....	18,765,000	16,705,000	5,962,000
1919-1920.....	20,219,000	19,300,000	7,699,000
1920-1921.....	19,675,000	16,914,000	6,736,000
1921-1922.....	14,741,000	20,047,000	7,771,000
1922-1923.....	17,462,000	20,579,000	7,623,000
Average, 1908-1909 to 1914-1915.....	21,102,000		
Average, 1908-1909 to 1916-1917.....		21,040,000	10,996,000
Average, 1915-1916 to 1920-1921.....	19,031,000		
Average, 1917-1918 to 1920-1921.....		17,860,000	6,755,000
Average, 1921-1922 and 1922-1923.....	16,202,000	20,313,000	7,697,000

"The consumption estimates covering 1922-23 are based upon reports submitted by government representatives abroad, which gave the consumption in each country reported on, for the first four months of the season, 1 August to 1 Dec. 1922. From these consumption figures for the first four months, estimates have been made for the entire year. Due consideration has been given to general economic conditions, as well as to special conditions affecting the textile industry in each country; and if some unforeseen change does not occur, it is believed that the totals given are approximately correct. Allowance has already been made for decreases in consumption in many of the countries during the remaining months of the season; but if the price of cotton should go so high as to cause a general curtailment of mill consump-

tion, the quantities consumed for the remainder of the cotton year might fall off so sharply that the above totals would not be reached."

American Cotton Holdings and Consumption.—According to figures supplied by the Bureau of Census the cotton held in consuming establishments in the United States on 31 Dec. 1922 was 1,921,295 bales of lint and 123,104 bales of

In explanation of its method of arriving at the 1922-23 figures, the Department of Commerce says:

linters, compared with holdings totaling 1,738,138 bales of lint and 168,080 bales of linters on 31 Dec. 1921. Cotton held in public storage and

at compresses on 31 Dec. 1922 was 4,074,945 bales of lint and 38,103 bales of linters, compared with holdings on 31 Dec. 1921 of 5,206,663 bales of lint and 171,303 bales of linters. Cotton spindles active during December 1922 numbered 34,968,440, compared with 34,439,142 active in December 1921. The following table shows the monthly consumption by bales of domestic and foreign cotton (linters excluded) during the four-year period from 1919 to 1922, inclusive:

MONTHLY CONSUMPTION OF COTTON IN THE UNITED STATES.

	1922	1921	1920	1919
December.....	527,945	510,925	295,292	511,585
November.....	577,561	527,940	332,712	491,250
October.....	533,950	494,317	406,325	556,041
September.....	495,344	484,718	457,967	491,069
August.....	527,404	467,059	488,560	497,319
July.....	458,548	410,142	525,489	510,528
June.....	507,869	461,656	555,521	474,380
May.....	495,674	440,714	541,377	487,934
April.....	446,643	409,247	566,914	474,875
March.....	518,450	438,218	575,789	433,485
February.....	473,973	395,115	515,590	433,516
January.....	526,552	266,463	591,921	556,883

Fertilizer.—Commercial fertilizer was used on about 33 per cent of the 1922 American cotton acreage or on about 11,500,000 acres, according to data collected by the United States Department of Agriculture. An average of 249 pounds to the acre was applied, while the total amount of fertilizer used was 1,429,000 tons. This fertilizer had an average value of \$29.48 per ton, a total value of \$42,121,000. Using an average of 410 pounds per acre, North Carolina led all States in the application of commercial fertilizer to cotton. Virginia was a close second with 400 pounds to the acre, but the other States used far less, South Carolina ranking third with 280 pounds per acre.

Cottonseed and Cottonseed Products.—Statistics supplied by the Federal Census Bureau fix the amount of cottonseed crushed in the United States during the cotton year which began 1 Aug. 1921 and ended 31 July 1922 at 3,001,449 tons, compared with 4,069,166 tons crushed during the preceding year. The quantity received at the mills during the year was 2,918,102 tons, while the carry-over from the previous year was 99,821 tons. Cottonseed held at the mills on 31 July 1922 amounted to 13,880 tons. The amount of crude oil produced from 1 Aug. 1921 to 31 July 1922 amounted to 928,615,566 pounds; shipped out 934,056,333 pounds. The supply on hand 31 July 1922 was 6,897,496 pounds, against 18,762,794 pounds on 1 Aug. 1921.

The production of refined oil from 1 Aug. 1921 to 31 July 1922 was 839,783,005 pounds. The supply on hand on 31 July 1922 was 164,442,709 pounds, against 228,263,633 pounds on 1 Aug. 1921.

The output of cake meal from 1 Aug. 1921 to 31 July 1922 was 1,351,884 tons; shipped out, 1,320,799 tons. The supply on hand 31 July 1922 was 67,388 tons, against 36,303 on 1 Aug. 1921.

The production of hulls from 1 Aug. 1921 to 31 July 1922 was 835,074 tons; shipped out, 982,538 tons. The supply on hand on 31 July 1922 was 25,806 tons, compared with 73,280 tons on 1 Aug. 1921.

The output of linters from 1 Aug. 1921 to 31 July 1922 was 398,022 500-pound bales; shipped out, 481,488 500-pound bales. The supply on hand 31 July 1922 was 40,911 500-pound bales, against 124,477 500-pound bales on 1 Aug. 1921.

The yield of hull fiber from 1 Aug. 1921 to 31 July 1922 was 41,122 500-pound bales; shipped out, 38,436 500-pound bales. The supply on hand on 31 July 1922 was 34,362 500-pound bales, against 37,676 500-pound bales on 1 Aug. 1921.

The production of grabbots, motes, etc., from 1 Aug. 1921 to 31 July 1922 was 12,079 500-pound bales; shipped out, 17,177 500-pound bales. The supply on hand on 31 July 1922 was 1,522 500-pound bales, against 6,620 500-pound bales on 1 Aug. 1921.

The exports of linters for the 12 months ended 31 July 1922 amounted to 132,295 running bales, against 51,409 bales in the 12 months ended 31 July 1921.

The cottonseed produced in the United States in 1922-23 was estimated at 5,971,000 tons, valued at \$155,246,000. See also AGRICULTURE IN THE UNITED STATES; AGRICULTURE, UNITED STATES DEPARTMENT OF; ENTOMOLOGY, UNITED STATES BUREAU OF; PLANT INDUSTRY, BUREAU OF.

COTTONSEED. See COTTON.

COUDEN, Henry Noble, American clergyman; b. Marshall County, Ind., 21 Nov. 1842; d. Fort Myer, Va., 22 Aug. 1922. He served in the Union Army during the Civil War from April 1861 until July 1863, when he was honorably discharged because of a wound received in battle which destroyed the sight of both of his eyes. Thereafter he was graduated from the State School for the Blind at Columbus, Ohio, and then studied for the ministry at the Divinity School of Saint Lawrence University, Canton, N. Y. He was ordained a Universalist clergyman in 1878. In 1895, during the administration of President Cleveland, he was made Chaplain of the House of Representatives and held the office until he resigned 28 Feb. 1921. He was frequently referred to as the "Blind Chaplain of the House."

COUËISM, a theory of autosuggestion propounded by Émile Coué, a chemist of Nancy, France, after 20 years' study, in which he continued the work and experiments of Liebault, sometimes called the father of the doctrine of suggestion. Coué holds that the imagination or subconscious mind is stronger than the will, or conscious mind and that in conflicts between the two the subconscious mind is the victor. He contends that not only the moral acts of the individual but the action of every organ in the body of the individual obeys the subconscious mind. He proposes to control the subconscious mind through a form of hypnotism.

At Nancy, Coué has a sanitarium where he practises gratis. His first act is to place his patient in a passive frame of mind—there must be no will to be better, only a sincere belief that every ill, physical or mental, will be cured. To impress upon the patient the superiority of the subconscious over the conscious mind he explains that, if a plank 30 feet long and 10 inches wide is placed on the ground and the patient is

told to walk that plank he can do so without any difficulty, because he believes that he can. If the plank is then placed several hundred feet in the air and the patient is told to walk this plank, although his conscious mind realizes that this is possible, his subconscious mind is so sure that he will fall that he does fall. He illustrates to the patient that if he will concentrate on the idea of sucking a lemon his mouth will fill with saliva although the acid fruit has not been touched. That is the subconscious mind forcing an organ to obey an order which has been instilled in the imagination. The patient is then subjected to a series of hypnotic experiments, such as having him concentrate on the idea that his hands, placed together, cannot be separated; that he is going to fall, etc. Having firmly established in the patient's mind the power of the imagination over the will he is ready for the second step in his method.

The patient is told to lie down and, clearing his mind of all other thoughts, to repeat over and over in a sing-song voice "Every day in every way I am getting better and better." This is to be repeated aloud 20 times each day, preferably in bed and with a cord, knotted 20 times, in order that the repetition may be counted as mechanically as possible. The idea is then not a part of the patient's will to get better but a part of his subconscious belief that he is getting better. The subconscious mind will then direct the organs, as in the case of supplying saliva when the imagination has concentrated on sucking a lemon, to do the thing which will make the patient better. The patient who has rheumatism, concentrating on getting better each day will give his imagination the picture of himself able to walk, then able to run and the subconscious mind will direct the organs accordingly.

In every case M. Coué forbids an expression of the will to do. He holds that when the patient says "I will not be ill," the idea he gives the subconscious mind is that some organ is not functioning properly and the subconscious mind will misdirect the organ, as when the insomnia patient says "I will sleep" and, in his struggle to impose his will, becomes more wakeful. When a patient is suffering a mental or physical ill he is told to place his hand on his head, if the ill is mental; on the afflicted part if physical, and repeat mechanically "It passes, it passes," until the malady subsides.

Coué does not contend that all ills may be cured by this method, only that it will cure "if it is in any way possible." Nor does he claim to perform the cure himself; he teaches the patient how to cure himself. "Have confidence in yourself" is his slogan. He states that he is not working in opposition to the medical profession but advises his patient to go to doctors if they feel that need, but to practice Couéism as well.

The four laws formulated by Coué are: (1) "When the will and the imagination are opposed to each other, it is always the imagination which wins." (2) "In the conflict between the will and the imagination, the force of the imagination is in direct ratio to the will." (3) "When the will and the imagination are in accord, one does not add to the other but one is

multiplied by the other." (4) "The imagination can be directed."

Coué claims that Couéism can be taught children even before birth. He holds that, during the period of conception, the mother may determine not only the sex of the child but its physical and mental attributes by concentrating on the characteristics she wishes embodied in her child. He holds that this is proved by the alleged fact that Spartan mothers, concentrating on a desire to have male children who would become strong soldiers defending their state, brought forth such children, while Athenian mothers concentrated on and bore children whose mental qualifications surpassed their physical attributes.

After the birth of the child Couéism teaches that the child must be brought up on the affirmative basis of learning the thing which is good to do rather than the negative of the thing which it must not do. Before the child is able to talk he suggests that the parent repeat each night over its bed while it sleeps "Every day in every way you are growing better and better." The child is to repeat this formula for itself when it is able to talk.

In addition to the work which M. Coué does in Nancy he has numerous disciples working in other places, such as Prof. Charles Baudouin of the Institute; J. J. Rosseau of Geneva, Mme. Emile Leon and Mme. Kaugmant. On 4 Jan. 1923 M. Coué came to New York where he held a number of clinics.

DOROTHY N. BRYANT.

COURLAND, formerly a province of the Russian empire on the Baltic Coast. After the collapse of the empire in 1917 Courland was incorporated in the new Republic of Latvia. It has an area of 10,438 square miles and a population of 811,718. Mitau is the chief city but Libau is the chief seaport and the largest city. See LATVIA.

COURT OF INTERNATIONAL JUSTICE, Permanent. See PEACE AND ARBITRATION, INTERNATIONAL.

COUZENS, James, American public official: b. Chatham, Ontario, 26 Aug. 1872, the son of James J. Couzens, a soap maker of Chatham. After a little education in the high school he became news agent on the Erie and Huron Railroad, selling papers, candy and cigars on the trains and during his spare hours studied telegraphy. At the age of 18 he obtained employment in Detroit as a car checker, which position he held seven years. He then went to Toledo and was employed in the offices of a coal company and in 1898 returned to Detroit and was employed in the offices of a coal company there. In 1903, when he was earning \$1,800 a year as a clerk he borrowed some money and invested \$2,500 with the Ford Motor Company, assisting in the organization of the firm and taking the position of bookkeeper. Soon he became sales manager, next general manager and treasurer, and finally vice-president and treasurer. In 1915 Mr. Couzens severed his connection with the Ford Motor Company in America and became vice-president of the Ford Motor Company of Canada. He resigned in 1916 and sold all his holdings in both the American and

Canadian companies, amounting to \$30,000,000. In 1918 he became mayor of Detroit. His campaign for mayor was spectacular. He pledged himself to settle the street car question by giving Detroit the ownership of its car lines. He was successful and thus settled a municipal fight that had continued for 25 years. In 1922 Mr. Couzens was appointed by Governor Groesbeck United States senator to fill the unexpired term of Senator Truman H. Newberry, who had resigned. He has made many large gifts to charitable and philanthropical objects. The largest was given in 1922, \$5,000,000 for a children's hospital for free treatment of the State's crippled children. He also contributes \$100,000 a year to Detroit's community fund. He is a Republican.

COWS, Milk. See AGRICULTURE IN THE UNITED STATES.

COX COLLEGE, a non-sectarian institution for women located at College Park, Ga. It was founded in 1842. In 1922-23 it had a faculty of 22 members, a student enrollment of 188, property valued at \$500,000, and an income of \$40,000.

CRAFTS, Wilbur Fisk, American clergyman and reformer: b. Fryeburg, Maine, 12 Jan. 1850; d. Washington, D. C., 27 Dec. 1922. He was the son of a Methodist preacher of Puritan ancestry. He was graduated from Wesleyan University in 1869 with the degree of A.B., receiving in 1871 the degree of A.M.; and was graduated from the divinity school of Boston University in 1871. He received the degree of Ph.D. from Marietta College in 1896. The first eight years of his ministerial career he spent in his father's church, changing to Congregationalism in 1880, and in 1883 entering the Presbyterian ministry, where he remained thereafter. He was pastor successively at Stoneham, Haverhill and New Bedford, Mass.; Dover, N. H.; Chicago, Brooklyn and New York. After 1871 he was very active in Sunday school work. He founded the American Sabbath Union in 1889; lectured throughout the United States as its field secretary 1889-90; in 1895 founded and for 28 years was superintendent of the International Reform Bureau. He was chief editor of the *Christian Statesman*, 1901-03, and of the *Twentieth Century Quarterly* from 1896 until the time of his death. He was widely known as a reform leader because of his activities on behalf of Prohibition and similar movements. He averaged six lectures a week, delivered in 29 different countries, and wrote a book a year, most of which were on religious topics. He was official chairman of the United States delegates to the International Congress on Alcoholism, London in 1911; United States delegate to Purity Congresses, 1915, 1916; member of Union National Committee to frame the amendment for constitutional prohibition in 1915 and 1916; member of the Presbyterian Social Service Committee; and a member of the United Committee of War Time Activities, 1917. He wrote 'Through the Eye to the Heart' (1873); 'Trophies of Song' (1874); 'Successful Men of To-day' (1883); 'History of National Prohibition' (1920); and many others on the bible and Sunday school work.

CRAIG, Alexander Righter, American physician: b. Columbia, Pa., 31 July 1868; d.

Port Deposit, Md., 2 Sept. 1922. He was graduated A.B. from Franklin and Marshall College in 1890 and M.D. from the medical department of the University of Pennsylvania in 1893. He served as resident physician at the Philadelphia Polyclinic Hospital, 1893-94, practiced in Philadelphia until 1895; in Columbia, Pa., 1895-1906, then returned to Philadelphia where he practiced until 1911. That year he was elected secretary of the American Medical Association, a position which he held until his death. Doctor Craig served as a member of the Pennsylvania house of delegates continuously from 1903 to 1910 and was a member and chairman of many important committees. He was a member of the American Academy of Medicine and president thereof in 1912. He was a member also of the American Academy of Ophthalmology and Otolaryngology. Franklin and Marshall College conferred the degree of D.Sc. on him in 1920.

CRANBERRIES. The 1922 commercial cranberry crop of the United States was estimated by the Department of Agriculture at 562,000 barrels, compared with 384,000 barrels in 1921 and 449,000 barrels in 1920, all grown in the three States of Massachusetts, New Jersey and Wisconsin. The 1922 crop was valued at \$5,720,000; the 1921 crop at \$6,526,000 and the 1920 crop at \$5,514,000. The acreage was 25,000 for each of the three years. Massachusetts produced 300,000 barrels in 1922; 195,000 barrels in 1921 and 280,000 barrels in 1920. New Jersey produced 200,000 barrels in 1922; 160,000 barrels in 1921 and 133,000 barrels in 1920. Wisconsin produced 62,000 barrels in 1922; 29,000 barrels in 1921 and 36,000 barrels in 1920.

CREAMERIES, Co-Operative. See CO-OPERATIVE MOVEMENT.

CREDIT UNIONS. See CO-OPERATIVE MOVEMENT.

CREIGHTON UNIVERSITY, a Catholic institution, co-educational except in arts and high school, founded in 1878 and located at Omaha, Nebr. In 1922-23 it had a faculty of 158 members, 1,541 students, property valued at \$4,468,088.78 and an income of \$292,391.37. Rev. John F. McCormick, S.J., is president.

CRETE, or CANDIA, an island in the Mediterranean Sea formerly a Turkish possession but belonging to Greece since 1913. It has an area of 3,327 square miles and a population of 356,511. The capital Candia, has a population of 24,687. See GREECE.

CROATIA AND SLAVONIA, now a district of the kingdom of the Serbs, Croats and Slovenes, formerly a Crownland of the empire of Austria-Hungary. It extends eastward from the Adriatic to the rivers Danube and Drave. The area is 17,405 square miles and the population in 1920 was 2,715,237. The capital, Zagreb (Agram) has a population of 110,000. Being the centre of the most fertile region of the kingdom this city has within a few years become the economic centre of the nation also. For production, industry, etc., see JUGOSLAVIA.

CROKER, Richard (Welsted), Irish-American politician: b. Clonakilty, Cork, Ireland, 23 Nov. 1841; d. Glencairn Castle, County Dublin, Ireland, 29 April 1922. Succeeding to

the leadership of Tammany Hall upon the death of John Kelly in 1886, Mr. Croker, the possessor of remarkable political sagacity and a dominating personality, rapidly developed into the most powerful chieftain, in many ways, that has ever controlled the destinies of that famous New York political organization. From the obscurity of east side poverty and all that goes with it, he fought his way with his fists and his brain to the absolute dictatorship of America's most formidable political machine. In so doing he made himself, during the years he ruled Tammany, virtually the unofficial ruler of America's greatest municipality. Mr. Croker was the son of Eyre Coot Croker, the village blacksmith of Clonakilty. It is said that he was descended from Henry Croker, a major in the British army, and that another member of his family served in parliament. Be that as it may, when Mr. Croker, who was the youngest of seven children, was two years old, his parents, fleeing from a famine then sweeping over Ireland, engaged passage on a sailing vessel bound for America and took their children with them. They landed in New York and went to live in a little house on the old Bloomingdale road in a district which now constitutes a part of Central Park. Later they moved to a house in 26th Street and thereafter to another in 28th Street. The father, who, upon his arrival, had set up shop as a veterinarian seems to have been a failure as a practitioner and eventually accepted employment in the stables of the Harlem Car Company. Richard Croker's education was decidedly limited. He entered a public school in East 26th Street when he was 12 years old and quit when he was 15 without having won marked distinction for regularity in attendance. When he quit school he secured employment in the Harlem machine shops of what is now the New York Central Railroad Company. At 16 he is said to have been an expert mechanic. He helped to build and ran on its trial trip a locomotive that remained in service for many years. The beginning of Mr. Croker's rise to fame and fortune dates from about this period. Endowed with a powerful physique, an absolute stranger to fear, and the possessor of two fists which he knew well how to use, he thrashed one after another of the various fistic celebrities who resided in his section of the city. In a cellar near his home he whipped "Reddy" Flaskins and several other local fighters. He disposed of "Pat" Kelly in a saloon. He achieved his greatest pugilistic triumph in 1866 when he trounced "Dickie" Lynch, whom he met in Jones' Woods. Those were the days when New York's East Side was dominated by "gangs." The leaders of these "gangs" were brawny individuals who had won their laurels with their fists. Young Croker's fighting qualities so impressed the members of the old Fourth Avenue Tunnel gang that they soon made him their leader. That was the beginning of his political career. He next joined the volunteer fire department, "a recruiting school for politicians," and in that way made the acquaintance of Thomas F. Gilroy, the Scannells, and others whom he afterward raised to power. In 1868 he was elected a member of the Board of Aldermen, a position which carried with it a salary of \$4,000 a year. Mr. Croker always claimed that he had entered

politics as a reformer. He probably based his claim upon the fact that he was elected alderman on an anti-Tweed ticket. Afterward, however, he made peace with Tweed and received from the latter a good many political favors. Upon the expiration of his aldermanic term in 1870, he was appointed superintendent of markets, rents, and fees. When Tweed and his famous "ring" were overthrown in 1871, John Kelly succeeded to the leadership of Tammany Hall. The following year Mr. Croker formed an alliance with the new chief and in 1873 he was elected coroner. It was while holding this office that he was tried for the murder of John McKenna, a political lieutenant of "Jimmy" O'Brien, one of Mr. Croker's enemies. McKenna was shot on election day, 4 Nov. 1874, at Second Avenue and 34th Street. Mr. Croker was then leader of the 18th assembly district, and O'Brien was the leader of the anti-Tammany forces therein. Early in the morning of the election day referred to, Mr. Croker learned that a gang of O'Brien's men were driving away the men in charge and upsetting some of the booths that had been erected near the polling places in his district and from which printed tickets, showing the Tammany candidates for the various offices, were being distributed to the voters. Accompanied by some of his lieutenants, Mr. Croker started to make an investigation and soon came upon O'Brien and several of the latter's supporters. The meeting of the two leaders was followed by an interchange of superheated verbiage and in a few seconds a rough-and-tumble fight started. Suddenly McKenna emerged from the crowd which had formed a ring about the combatants and started toward them. Then a shot was fired and he fell to the ground. The fighting stopped and he was picked up and taken to Bellevue Hospital where he died a day or two later. The police department's record of the affair is as follows: "At 7:40 A. M. an altercation took place at Second Avenue and 34th Street between Richard Croker, John Sheridan, Henry Hickey, James O'Brien and John McKenna. McKenna was shot in the right side of the head; fatal wound; taken to Bellevue."

The shooting created a sensation. Mr. Croker was arrested and taken to the station house where O'Brien laid a charge of murder against him. At that time he had no money but Tammany backed him up and financed his fight. His attorneys were Harry L. Clinton, John R. Fellows and George W. Wingate. At the trial McKenna's friends swore that after the shot was fired they had seen a smoking revolver in Mr. Croker's hands. Other witnesses testified to the contrary. The jury voted 10 to two for acquittal and eventually he was set free. His friends always claimed that he could easily have established his complete innocence had he been willing to betray the guilty party and this claim was reiterated after his death in a statement given out by General Wingate in which the latter said: "Croker knew all the time who fired the shot that killed McKenna; consequently we knew. We of counsel knew that at any time we could definitely and positively prove Croker's innocence, but he wouldn't let us do it. Why? For the simple reason that he stood by his friends; he had already learned the first principle of politics. The man who fired the shot

was one of Croker's party and was standing near him, but his name has never been published or connected with the crime. But, I believe that the shooting was actually the making of Croker. Tammany Hall, of which Kelly was the leader, looked on him as a martyr and justly. Now that he is dead I am glad to tell the tale. At the same time I do not feel justified, even now, in telling the name of the man he was so anxious to protect."

Mr. Croker was re-elected coroner in 1876 and again in 1879. In 1883 he was once more a candidate for alderman and was elected by the narrow plurality of 200 votes. Shortly thereafter he was appointed fire commissioner by Mayor Edson. It was due very largely to Mr. Croker's influence that Hugh J. Grant was nominated for sheriff in 1884. Grant was elected and while in office, according to testimony given by Patrick H. McCann, Mr. Croker's brother-in-law, before the Fassett investigating committee in 1890, made a present to Mr. Croker's two-year-old daughter Florence, of \$25,000. Grant explained by saying that the little girl was his godchild. The explanation must have been satisfactory to the public. At any rate there is nothing to show that the exposure had any appreciable effect upon the political careers of either Grant or Mr. Croker.

Mr. Croker did not immediately succeed to complete control of Tammany following the death of John Kelly in 1886. At first the members of the executive committee asserted that they, and no boss, would manage the affairs of the organization. The rule of the entire committee was exceedingly brief. Out of the 24 members emerged the four strongest: Mr. Croker, Hugh J. Grant, Thomas F. Gilroy and W. Bourke Cockran. This quartet ruled for a while but within a year the other three had given way to Mr. Croker, who, from that time until 1902, with the exception of a little over two years spent in England in the '90s, governed Tammany with a rod of iron. He was designated chairman of Tammany's finance committee, the position of greatest importance in the organization. Soon after his elevation to the leadership he instituted the system under which all persons owing allegiance to Tammany were required to report to headquarters in 14th Street. There were then 90,000 men, under 35 district leaders, on Tammany's roll. Each of these leaders had fought his way to leadership, and occasionally some of them attempted to fight Mr. Croker, but he always knew what was going on and speedily stamped out insurrections. The first important nomination made by Mr. Croker after becoming chief of Tammany Hall was that of Abram S. Hewitt, and old opponent of Tammany, as the Democratic candidate for mayor against Henry George. Hewitt was elected in an exciting contest and gave New York an excellent administration. But, he refused to take orders from Mr. Croker and the result was his political undoing. Two years later, in 1888, the new boss of Tammany, with a boldness that astonished even the Croker lieutenants, turned him down for re-nomination and supported Hugh J. Grant, whose election gave New York the first straight-out Tammany mayor the city had had for a generation. Mr. Croker was rewarded by being made city cham-

berlain which position he held from April 1889 until he resigned in February 1890. Before the expiration of Mayor Grant's term, in 1890, the Fassett investigating committee brought to light, along with other more or less sensational disclosures, the facts concerning the mayor's \$25,000 gift, while holding the office of sheriff, to Mr. Croker's little daughter. In the face of this exposé, Mr. Croker astounded New York by re-nominating and re-electing Mayor Grant. Few political leaders would have had the courage to even think of doing such a thing. It was by just such manifestations of boldness, however, that he endeared himself to the Tammanyites who worshipped boldness above everything else. To this unbroken string of victories Mr. Croker added another in 1892 when Thomas F. Gilroy, grand sachem of Tammany, was elected mayor by a plurality of 76,000 votes. The same year he made, what some of his friends have referred to as one of his "few political blunders," by opposing the renomination of Grover Cleveland for President. Things went along smoothly enough thereafter until the Lexow Committee began its investigation in 1894 that resulted in the loss to Tammany of the municipal election that followed. In May of that year, while Tammany was facing one of the hardest campaigns of its career, Mr. Croker suddenly called in his lieutenants, announced that he was through with politics, resigned as chairman of Tammany's finance committee, and a short while thereafter went to England to live. For more than two years he resided at Wantage, occupying the estate known as the Moat House, and devoting the greater part of his time to his racing stable, estimated then as having a value of \$160,000. Before leaving America he invested a quarter of a million dollars in the Belle Mead stock farm in Tennessee. About a year after he surrendered his leadership of Tammany, John C. Sheehan was selected to take his place. In the summer of 1897 Mr. Croker returned to New York. At first he disclaimed any intention of resuming his leadership but in the fall after his return Sheehan was deposed and Mr. Croker once more took his place at the head of Tammany Hall. The election at which the first Mayor of Greater New York was to be chosen was then approaching. Mr. Croker selected Robert A. Van Wyck as his candidate and when the ballots were counted the results showed another victory for Tammany. Mr. Croker was then at the zenith of his power. He is said to have distributed political patronage, usually without even consulting Mr. Van Wyck, and virtually to have run the city to suit himself. He was flattered and feted by all in search of political favors. Over 1,000 of his enthusiastic admirers, at \$10 a plate, subscribed to a dinner given in his honor in 1899 and around the festal board heaped eulogies upon him. About this time the Mazet Investigating Committee began its work. It was the third investigation into New York City affairs to take place during Mr. Croker's rule over Tammany Hall. He had then amassed what was generally believed to be a tremendous fortune and the Mazet Committee spent much of its time in an effort to ascertain the sources of his wealth. Testifying before the committee, he made the admission, thereafter so frequently

quoted by his enemies, that he was "working for his own pocket, all the time, every day in the week." The close of the Van Wyck administration was followed by another political upheaval as the result of which Seth Low, a Republican running on a Reform ticket, was elected Mayor. By this time Mr. Croker had grown weary of politics and in 1902 he surrendered finally his control of Tammany Hall, quit New York, and took up his residence at Glencairn Castle, County Dublin, Ireland, where he spent the greater part of his remaining years and where he devoted himself to the breeding of race horses. It was there that he bred Orby with which he won the English Derby, the Irish Derby, the Curragh, and the Baldoye Derby in 1907. There also he bred Rhodora, Orby's half-sister, with which he won the English Guineas in 1908. Mr. Croker was twice married. His first wife was Miss Elizabeth Fraser of New York by whom he had nine children and who died in 1914. Three of his children died at an early age. Frank, his second son, was killed in an automobile accident at Ormonde Beach, Fla., in January 1905 and in May following Herbert, his third son, died on board a train between the towns of Emporia and Newton in Kansas. One of Mr. Croker's daughters married Count Louis San Martini of Naples. Within a year after the death of the first Mrs. Croker, Mr. Croker married Miss Beula Benton Edmondson whose mother belonged to the Cherokee tribe of Indians. After his second marriage Mr. Croker divided his time between Glencairn Castle and Palm Beach, Fla., where he built an unpretentious winter home which he called The Wigwam. In April 1920 two of his sons, Richard, Jr. and Howard, and one of his daughters, Mrs. Ethel White, instituted a suit in one of the courts of Florida, alleging that their father "enfeebled by age" was mentally incapable of handling his own affairs and that as a result the second Mrs. Croker had obtained control of his property through the exercise of undue influence. The court was asked to declare Mr. Croker incompetent to manage his estate, also to appoint a custodian of his property, and to issue a temporary order restraining him from disposing of any of the property involved, valued at over \$2,000,000, pending the litigation. The final outcome of the suit was a complete victory for Mr. Croker and the absolution of his wife from the charges made against her. Mr. Croker never forgave his children and gave his entire estate, estimated at the time of his death to have a value of between \$3,000,000 and \$5,000,000, to his widow. So numerous were the victories won by Mr. Croker while he was leader of Tammany Hall that he was looked upon by many as a sort of political superman. He owed his success, however, not alone to his political sagacity and his courage which often approached audaciousness, but also to the fact that he despised hypocrisy, always fought in the open and always kept his word.

CROW, William E., United States senator: b. German Township, Fayette County, Pa., 10 March 1870; d. near Uniontown, Pa., 2 Aug. 1922. He attended the country schools and

was graduated from the Pennsylvania State Normal School at California, Pa., in 1890, and later received the degree of A.B. from Waynesburg College. After serving as a teacher for two years, he became a newspaper reporter in Pittsburgh. He abandoned this field for Uniontown, where he became editor of *The Uniontown Standard* in 1894. He studied law and in 1895 was admitted to the Fayette County, Pa., bar. He had always been interested in county politics, and in 1896 was appointed an assistant district attorney. Within three years he was elected district attorney, perhaps the youngest man ever chosen to that office in Western Pennsylvania. Always a Republican in politics, Mr. Crow in 1895 was made secretary of the Republican County Committee and elevated to the chairmanship four years later. He met his first political reverse in 1902, when he was defeated for State senator. This he overcame in 1906, and from that time until his appointment by Governor Sproul in 1921 to succeed the late Philander C. Knox in the United States Senate he was continuously a member of the Pennsylvania upper legislative body. In 1913 he was made chairman of the Republican State Committee, and served until 1918. He was very successful as a political leader and was a powerful factor in the councils of his party.

CUBA, an island republic of the West Indies with an area of 44,215 square miles and a Latin population of 2,889,004. Spanish is the national language. The island is divided into six provinces, which with their populations are as follows: Camaguey, 228,913; Habana, 697,583; Matanzas, 312,704; Oriente, 730,909; Pinar del Rio, 261,198; and Santa Clara, 657,697. The white population forms 74.3 of the total, but it must be remembered that in Cuba the term "white" is very inclusive. During the great business boom following the war in Europe there was a large immigration from Spain and other countries, reaching a total of 340,000 in 1920. The chief cities are Habana, the capital (pop. 363,506); Camaguey (98,193); Cienfuegos (95,865); Santiago (70,232); Guantanamo (68,883); Santa Clara (63,151); Matanzas (62,638); Manzanillo (56,570); Sancti Spiritus (58,843); and Pinar del Rio (47,858).

Education.—As early as 1880 education was made compulsory in Cuba but the law was not well enforced under the Spanish regime. After independence was established the elementary and secondary systems were reorganized. From that time to the present education has made rapid strides in the republic, every town and rural district being supplied with school facilities and instruction of a high order. There are approximately 6,000 schools of primary grade with 8,000 teachers and a registered attendance of 338,788 pupils. There are provincial institutes for advanced or secondary education, one in each of the provincial capitals and a university in Habana with the usual faculties of arts and sciences, medicine, law, etc.

Religion.—Roman Catholicism is the religion of most of the inhabitants but freedom of conscience is guaranteed to all other forms by the Constitution.

Mining.—Cuba has always been essentially

an agricultural country, but the mineral resources have of late years attracted attention, so that the products of the land promise to be more diversified as Cuba becomes better understood. The Province of Oriente, as Santiago is now known, is the richest as regards mineral wealth, but other provinces are not far behind. The metals produced are iron, copper, manganese, gold, mercury, zinc, lead, silver, antimony. Coal, asbestos, asphalt, and petroleum help swell the list of the natural resources now being developed. The island's mining area extends over 915,000 acres.

Agriculture.—Sugar and tobacco are the chief products of this industry. The sugar plantations cover an area of 1,400,000 acres and the crop in 1922 was close to 4,000,000 tons, of which 3,960,000 had been ground before the end of August. There are nearly 200 sugar mills. Tobacco will always be an important crop due to the unique flavor that attaches to the variety coming from the area called the "Vuelta Abajo." Coffee, cocoa, the cereals, potatoes, and rice are grown mostly for home consumption, but fruit exports are increasing. Cuba now exports bananas, pineapples, oranges, grape fruit, and cocoanuts. Agriculture is profitable, for the climate and flora are both suitable, and the production of honey has resulted in an export trade now amounting to \$750,000 yearly. The land is well adapted to the raising of live stock. The absence of cold, the good pastures and freedom from pests are favorable factors. There are on the island 3,970,000 head of cattle, 760,000 horses, and 65,000 mules. Whatever manufacturing is done depends on the agricultural products, although in the large cities small factories or household industries supply local or domestic needs. Cotton is being cultivated experimentally. The sponge fisheries are also important in the region of the Isle of Pines. The forests contain the finest cabinet woods such as the cedars and mahogany and also dyewoods, gums, resins, etc.

Commerce.—Cuban foreign trade in 1921 and 1922 fell from the high levels of the war years and the succeeding period of inflated values. The island had an external trade in 1920 of nearly \$1,350,000,000, two-thirds of which represented exports. The foreign trade of Cuba for the 12 months ended 14 Nov. 1922, fell below the corresponding period of 1921 by \$489,893,811, according to Cuban customs statistics. The total foreign commerce of the Republic (exclusive of currency) dropped from \$956,554,249 to \$466,660,438 during this period. Merchandise imported into Cuba during the latter period amounted to approximately \$183,000,000, as compared with about \$562,000,000 for the preceding 12 months. Exports of merchandise for the past 12 months totaled about \$284,000,000, against an approximate value of \$395,000,000 for the previous 12 months. The balance of trade swung from an unfavorable balance of about \$167,000,000 to a favorable balance of about \$100,000,000. Merchandise exported to the United States during 1922, amounted to \$245,715,563, an increase of nearly \$25,000,000 over 1921, returned American goods amounted to over \$4,000,000 as compared with about \$2,500,000 in 1921.

Communications.—The extent of railways in the republic is 3,250 miles. This makes Cuba, in proportion to its size, one of the best served republics in America in respect to railroad transportation. The larger sugar estates have many miles of private railways which connect with the trunk lines. The republic has direct steamer connection with many ports of the United States, Mexico and Europe. Local steamers connect Cuban ports with each other. There are 750 post offices and nine wireless stations operated by the government.

Economics and Finance.—Disturbed trade conditions caused havoc with the administration and there was much unrest in 1922. The first hopeful signs of a revival appeared in the autumn due to the continued efforts of the administration to place national finances on a sound basis. The firm sugar market, notwithstanding the increase in the American tariff, was another important factor making for a better outlook, while the extension of the time limit for the re-exportation of merchandise in bonded warehouses acted as an immediate relief of importance. In July the new Cuban budget went into effect and the government expenditures were reduced to a better basis than for several years. Leaving for subsequent settlement the floating debt, the government proceeded to pay current expenses from current income. Prominent before the administration during the year was discussion of the means of retiring the current indebtedness known as the floating debt. The question practically resolved itself into the consideration of an external loan of \$50,000,000. To meet the interest and provide for the amortization of this exterior loan it was seen that additional revenues would be required. For this purpose a gross sales tax of 1 per cent was considered. The budget for the fiscal year 1922 estimated revenues at \$75,957,600. The estimated expenditures fell under this sum but in practice the revenue did not materialize and the government passed through a financial crisis unprecedented in its history. It defaulted in meeting the service of the exterior bonded debt and the unpaid arrears of the interior loan of 1917 aggregated approximately \$3,000,000. In August the floating debt (unpaid current obligations) closely approximated in amount the total annual receipts of the national treasury from all sources. (From memorandum of General Crowder, U. S. A., to the Cuban President Zayas, 21 July 1922.) The foreign debt of Cuba, according to the latest official estimate, is \$49,644,000 and the internal debt, \$38,662,100.

Army and Navy.—The peace strength of the army is 16,569 officers and men. The personnel of the navy numbers 1,050 officers and men.

Government.—Executive power is vested in a President elected for a term of four years indirectly by an electoral college and he may not serve more than two consecutive terms. The President in 1922 was Dr. Alfredo Zayas, who was inaugurated 20 May 1921 for the term ending 20 May 1925. The Senate and House of Representatives, forming together the National Congress, are the legislative power. The former consists of 24 members and the latter of 118 members. Senators are elected indi-

rectly for terms of eight years and representatives for four years by popular vote. Congress meets at the capital, Habana, twice each year, on the first Monday in April and November, each session lasting for at least 40 days. It may also meet in extra session when summoned by the President or in accordance with its own rules. The President is assisted in his executive functions by a cabinet of eight ministers with the usual portfolios.

History.—On 25 Jan. 1922 the Cuban Government requested the Government of the United States to withdraw marines from Camagüey, otherwise known as Puerto Principe. We should not overlook, in this connection, the fact that the Cuban House of Representatives had expressed, 7 Dec. 1921, its view in regard to the continued presence of troops of the United States at the place mentioned, the largest city of the interior. The marines had been sent there at the beginning of the Great War. On 7 February the withdrawal took place. On 4 March prize-fighting was legalized, under a boxing commission. To the Pan-American Conference of Women, at Baltimore, Md., 20-29 April, several groups of Cuban women sent delegates, El Club Femenino de Cuba and the Partido Nacional Sufragista being the groups named in the *Bulletin* of the Pan American Union, April 1922. On 5 May, at Habana, occurred the death of Gen. Emilio Núñez, a leading figure in the Revolutions of 1868 and 1895 (which are described in 'Encyclopedia of Latin America,' pp. 627 seq.). On 6 June, in New York City, was dedicated the Casanova School, which perpetuates the memory of Inocencio Casanova, a Cuban patriot who devoted his fortune and his energy to the cause of Cuba Libre in the Revolution of 1868. On 10 June was published the Cuban President's decree in support of the International Sanitary Conference of Montevideo and of the International Sanitary Office. One week later Dr. Carlos Manuel de Céspedes, who had been since 22 July 1914 Envoy Extraordinary and Minister Plenipotentiary of Cuba in the United States, was appointed Secretary of State by President Zayas. On 28 July the son of the American Consular Agent at Sagua la Grande was kidnapped and held for \$20,000 ransom. And on the same day, 28 July, was celebrated at Habana the 50th anniversary of the Institute of San Vicente de Paul, an asylum and trade-school founded by the Jesuits to aid the poor of Habana. On 31 July the national indebtedness was given as about \$141,500,000 (foreign debt, \$51,703,500; internal, \$39,838,900; floating debt, \$50,000,000, approximately). On 18 August the Senate of the United States voted in favor of an import duty of \$1.84 per 100 pounds on Cuban sugar, and \$2.30 per 100 pounds on sugar from other countries. On 20 August it was made known that the State Department of the United States was taking "steps to prevent further smuggling of Chinese and European aliens from Cuba." In the same month announcements were published to the effect that the Cuban Government had ceded to the María Jaén Protective Association for Tubercular Children 232,500 square meters of land on the north shore; also that the Government had appropriated \$50,000 for the Sixth Latin-American Medical Congress. On 15 Sep-

tember the 'Gaceta Oficial' published a decree of President Zayas amending the law governing the prescription, distribution, and use of narcotics. And, under date of September, announcement was made in respect to other matters: A fair will be held in Santiago de Cuba, 10-20 October, under the auspices of the 'Asociación de la Prensa de Oriente,' for the purpose of exhibiting products of national and foreign industry. The Secretary of Agriculture, providing against the spread of disease among cattle, issued orders to reopen a laboratory of the veterinary section in which preventive serums are made for gratuitous distribution among agriculturists. The Government was planning to commence, when its resources should permit, the construction of granite block pavement to support the heavy traffic on the island's roads,—the total length of which was given as 2,375 kilometers, not including the 75 kilometers on the Isle of Pines. The President issued a decree creating, as part of the Department of State, a bureau for the affairs of the League of Nations, in the same decree providing that the Cuban delegation to the League of Nations should have a permanent character. The Secretary of Government issued an order constituting a censorship committee with power to "eliminate films which teach the ways of criminals and corrupt youth." On 1 October the opening of the radiotelephone service was celebrated at the Presidential Palace, and, from apparatus installed there, President Zayas transmitted a salutation to the President and people of the United States. In October it was noted that the Government decided to accept an invitation to become a member of the International Hydrographic Commission, which will aid in the establishment of a national office for Cuba to correct the charts of islands, bays, coasts, keys, and reefs in Cuban waters. On 6 November the dispensaries of the Red Cross of Habana became accessible to the public. On 7 November a new child-welfare station was opened for the benefit of the poorer classes and unprotected children. On 19 November occurred the official inauguration of the Sixth Latin-American Medical Congress, of an International Commercial Exposition, and of the National Convention of Maternity,—all under the direction of the Secretary of Public Health. On 25-30 November were held sessions of the First Cuban National Sugar Congress. And, toward the end of the year, the following topics: Three leper patients, treated with chaulmoogra oil at the Leprosarium of San Lázaro in the town of Rincon, had been dismissed as cured, after tests made at the Laboratory of Scientific Investigations. The Secretary of Agriculture, Commerce, and Labor informed the Cabinet that a commercial mission was to be sent by Cuba to Europe, to advertise the country's resources and progress. On 5 March 1923 Maj.-Gen. Enoch H. Crowder, U. S. A., whose appointment as the first United States Ambassador to Cuba was confirmed by the Senate on 10 Feb. 1923, presented his credentials to President Zayas.

MARRION WILCOX.

CUCUMBERS. The 1922 crop of cucumbers, grown in the United States for manufacturing purposes (pickles, etc.), was estimated by the Department of Agriculture at 2,619,480

bushels, a decrease, compared with the 1921 crop of 42 per cent. A long-continued drought and smaller acreage were given as the chief causes of the low production. The average yield was placed at 50 bushels per acre compared with 71 bushels in 1921. Acreage declined from 63,220 in 1921 to 52,831 in 1922. Michigan led in production with a crop of 1,002,000 bushels, which was approximately one-half of its 1921 crop. Wisconsin grew 365,500 bushels in 1922; Indiana, 209,000 bushels; Colorado, 200,000; California, 185,000; New York, 146,550 bushels.

CULLEN, Edgar Montgomery, American jurist: b. Brooklyn, N. Y., December 1843; d. there 23 May 1922. He was educated at Kinderhook College and was graduated at Columbia in 1860. When the Civil War began he was studying in the Rensselaer Polytechnic Institute and left to enlist. He was commissioned lieutenant in the 1st United States Infantry and served until 1862, when, although only 19 years old, he was made colonel in the 69th New York Volunteer Infantry. Before he was 21 he commanded a full brigade in action. Owing to wounds he was retired and returned to the study of engineering. This he relinquished for the law, and was admitted to the bar in 1867. He became active in Democratic politics and from 1872 to 1875 was assistant district attorney in Kings county. In 1876 he was engineer in chief on the staff of Governor Samuel J. Tilden. In 1880 he was elected to the Supreme Court of New York and re-elected in 1894. He was appointed to the Court of Appeals in 1900 by Governor Roosevelt and made chief justice of that court by Governor Odell to succeed Alton B. Parker, who resigned to run for President. Only advancing age compelled his retirement and he was a Supreme Court justice in Brooklyn for 30 years. The degree of LL.D. was conferred upon him by Columbia in 1892, Union College in 1905, and Harvard in 1915.

CULVER-STOCKTON COLLEGE, a co-educational institution controlled by the Disciples of Christ, founded in 1853 and located at Canton, Mo. In 1922-23 it had a faculty of 17 members, 275 students, property valued at \$250,000, and an income of \$37,000. John H. Wood, D.D., is president.

CUMBERLAND PRESBYTERIAN CHURCH. This denomination was an outgrowth of the great revival, in parts of Kentucky and Tennessee in the year 1800, when three ministers, who because of their rejection of certain features of the doctrines of the Presbyterian Church—election and reprobation—had, in effect, been suspended from the ministry of that denomination in Dickson County, Tenn., on 4 Feb. 1810, organized themselves into an independent Presbytery which they named Cumberland Presbytery. Their names were Finis Ewing, Samuel King, and Samuel McAdow. Because of the name selected for their Presbytery these men and others who associated with them, soon became known to the public as Cumberland Presbyterians, which fact accounts for the name of the denomination. In three years the organization had

gained a sufficient number of adherents to constitute three Presbyteries, and, in October 1813, having the necessary number of Presbyteries, at Beech Church, in Sumner County, Tenn., a congregation still alive and active, these Presbyteries constituted a synod, which became known as Tennessee Synod of the Cumberland Presbyterian Church. In a "brief statement" formulated and published by the synod the points wherein Cumberland Presbyterians disagreed with the doctrines of the Presbyterian Church were set out. These points were: (1) There are no eternal reprobates; (2) Christ died not for a part only, but for all mankind; (3) All infants dying in infancy are saved through Christ and the sanctification of the Spirit; (4) The operation of the Spirit of God is coextensive with the atonement made by Christ, in such a manner as to leave all men inexcusable. Neither Cumberland Presbytery nor Tennessee Synod was ever a part of the Presbyterian Church, North or South. In 1829, at Princeton, Ky., the first General Assembly of the Cumberland Presbyterian Church convened and the body has met every year since, in the month of May, the last meeting being at Greenville, Tenn., in May 1922, at which time it adjourned to meet at Fairfield, Ill., 17-23 May 1923. In 1906 a large part of the ministry and membership of the Church became a part of the Northern Presbyterian Church, taking with them all of the general property of the denomination and a larger part of the congregational property, but the denomination was perpetuated and is trying to play a humble part in evangelizing the world. The denomination now has an organized membership of about 66,000, and an estimated unorganized, but co-operating membership, of about 20,000, with 1,273 congregations and 774 ministers. It has 11 synods, 67 Presbyteries, and congregational property aggregating in round numbers \$3,000,000. Though it lost all of its publishing interests and educational institutions as a result of the exodus from its membership in 1906, it now has a publishing house which, with its equipment, is worth \$44,000, above liabilities, and a school at McKenzie, Tenn., with a literary, business, musical and theological department and an endowment of approximately \$500,000, all of which has been created since the exodus of 1906. It has a well supported weekly paper, a full line of Sunday-school literature, denominational books, etc. It has a full complement of well organized boards and a happy and contented constituency.

J. L. HUDGINS,

Editor and Manager, Cumberland Presbyterian Publishing House.

CUMBERLAND UNIVERSITY, a Presbyterian (U. S. A.) co-educational institution, founded in 1842 and located at Lebanon, Tenn. In 1922-23 it had a faculty of about 25 members, over 600 students, property valued at \$500,000 and an income of over \$100,000. Rev. John Royal Harris, D.D., is president.

CUNO, Carl Joseph Wilhelm, Chancellor of Germany: b. Suhl, Thuringia, Germany, in 1846. He was educated in Berlin, Heidelberg and Breslau, studied jurisprudence and political science, was Assistant Attorney-General and

then Attorney-General, and in 1906 entered the Department of the Treasury of the German Government. In 1912 he was made Privy Councillor. For three years during the World War he served as economic and financial adviser and was also managing director of the grain and food organization. In 1917 he became a member of the board of directors of the Hamburg-American Line and upon the death of Albert Ballin was chosen head of that company. In 1918, 1919, 1920, he was appointed by the German Government as one of the experts in the armistice negotiations at Brussels, the peace negotiations at Versailles and the reparations negotiations at Brussels. Doctor Cuno visited the United States in 1920, 1921 and in the summer of 1922, and concluded the agreement between the Hamburg-American Line and the Harriman interests operating the United American Lines. During his last visit he was presented to President Harding by the German Ambassador and had a long interview. Doctor Cuno has been repeatedly offered the post of German Ambassador to the United States, and after the death of Rathenau was urged to become Minister of Foreign Affairs. As head of the Hamburg-American Line, he opposed Stinnes and forced his resignation from the Hamburg-American Line and several other shipping companies when Stinnes started his own line to South America in competition with the Hamburg-American Line about a year ago. In November 1922 Doctor Cuno was chosen by President Ebert to be Chancellor of Germany. He practically stands at the helm of the country to guide its destinies, to discover and forward practical constructive policies for the readjustment of his country. He is a tall blonde man, more than six feet, with a strong personality and great ability in directing team-work, and, moreover, has broad vision and determined will. His financial interests are numerous. He is a member of and chairman of the Woermann Line, German East African Line, Meat Import Company of Hamburg, Hamburg Traffic Company, Cold Storage and Transit Stock Company, Storage and Forwarding Company of Hamburg, Mineral Oil Commerce Company and German-American Oil Company. He is also a trustee of the Bavarian Lloyd, the Towing, Shipping and Salvage Company of Hamburg, the Cuxhaven Highsea Fisheries, the "Deutsche Werft" shipbuilding yard, the Middle Europe Dining and Sleeping Car Company, the Shipping Trust Company and the Universum Film Company. In a review on the European crisis he says: "What after all is the heritage the war has bequeathed to us? The productive power of entire generations has been annihilated, the purchasing capacity of entire nations reduced to next to nothing, the means of communication from country to country disorganized beyond all recognition, the world's economic activities used as a means for satisfying selfish political ends, and the spirit of international co-operation turned into its very opposite. Such is the position to-day and the document which we are forced to acknowledge to be a 'treaty of peace' has been elaborated to perpetuate it. . . . We are still far from living under peace conditions: Military and economic war measures are either still in force, or are threatened to be enforced at a moment's notice; and the *since*

qua non of the unrestricted resumption of international economic relations is to face the problem of how to secure the economic foundations on which the future of the world is to rest. Economic, and not political, considerations alone can lead to a complete disappearance of all the difficulties with which the world is confronted to-day."

CURACAO, a colony of Holland in the West Indies composed of two groups of islands nearly 500 miles apart. The larger of these in area is made up of the islands of Curacao, Bonaire and Aruba, the second of the islands of Saba, Saint Eustache and part of Saint Martin. The combined area of the islands of the colony is 403 square miles with a population of 53,702 in 1920.

The administration is vested in a Governor, assisted by a Council, composed of a Vice-President and three nominated by the Queen of the Netherlands. There is also a Colonial Council of 13 members nominated by the Queen. About 47,000 of the inhabitants are of the Roman Catholic faith, 6,000 are Protestants and 500 Jews. There are 40 schools with 7,304 pupils. The colonial revenues come from import, export and excise duties and from some special taxes. The colony produces Indian corn, cattle, pulse, beans, salt and phosphate of lime. Oil refining is an important industry. The overseas trade of the colony is about 16,000,000 guilders yearly, with imports slightly in excess of exports. The budget for the year 1922 estimated revenue to the amount of 1,302,000 guilders and the expenses at 2,723,000 guilders, the deficit to be supplied by Holland. The principal exports are sugar, rum and cocoa. About 3,000 vessels of an aggregate tonnage of 3,000,000 enter at the island ports annually.

CUTLERY. Cutlery and edged tools are classified together by the United States Census Bureau, which reports over 300 concerns in the industry, capitalized at \$69,000,000. The wage workers draw \$20,000,000 in prosperous years, but probably not over \$17,000,000 in 1922. In addition the industry pays four to five million dollars annually to salaried men. In 1919 materials to the value of \$18,218,000 were converted into cutlery and edged tools of the wholesale value of \$66,629,000. The product of 1922 is estimated as slightly over \$50,000,000.

CUTTEN, George Barton, educator: b. Amherst, Nova Scotia, 11 April 1874. He was graduated from Acadia University, which gave him the degrees of B.A., M.A. and LL.D. In 1897-98 he was pastor of Montewese Baptist Church; from 1898-1904, of the Howard Avenue Baptist Church, New Haven; from 1904-07, of the First Baptist Church, Corning, N. Y., and from 1907-10, of the Baptist Church, Columbus, Ohio. In 1922, Doctor Cutten was made president of Colgate University. Yale conferred upon him the degrees of B.D. and Ph.D. and Colgate University that of D.D. Doctor Cutten has contributed to magazines and is the author of 'The Christian Life in a Baptist Church,' 'The Case of John Kinsel,' 'The Psychology of Alcoholism,' 'The Psychological Phenomenon of Christianity' and 'Three Thousand Years of Mental Healing.'

CUYLER, Thomas DeWitt, American lawyer and railroad man: b. Philadelphia, Pa., 28 Sept. 1854; d. on train near Philadelphia, 2 Nov. 1922. He was educated in schools in Philadelphia and was graduated from Yale in 1874, studied law and was admitted to the bar. Through his father, Theodore Cuyler, general counsel for the Pennsylvania Railroad, he was early brought into contact with railroad affairs. He became counsel for a number of Scottish and English development companies that brought settlers to the West to open up new territories. In this work he spent much time in Texas, New Mexico, California and other States where railroads were being built, and acquired practical knowledge of railroad construction. In 1899 he was elected a director of the Pennsylvania Railroad and became a director of several railroads included in the Pennsylvania system, as well as of the Atchison, Topeka and Santa Fe, New York, New Haven and Hartford, Rutland Railroad, New York, Ontario and Western, Maine Central, the Long Island and others. Mr. Cuyler was counsel in the reorganization of the Asphalt Company of America and a director of the Interborough Rapid Transit Company, the Equitable Life Assurance Society, the Bankers' Trust Company, the Western Union Telegraph Company, the Guaranty Trust, the Metropolitan Trust and the United States Mortgage and Trust, the Philadelphia Savings Fund Society, the Commercial Trust Company and many other corporations, including real estate and hotel companies. In 1918 he succeeded Frank Trumbull as chairman of the Association of Railway Executives; and he spent all his time in this work, which involved continuous traveling. For the last five years his mileage was probably greater than that of any other man in the country. In all the complicated negotiations of the day he represented the railroads. He fought the Plumb plan, which he characterized as the worst form of Government ownership. When the railroads were returned to private ownership he was the spokesman in demanding as an alternative to higher rates a "liquidation of labor costs." Mr. Cuyler was also one of the most important witnesses before the Railway Labor Board in March 1921.

CYPRUS, an island belonging to Great Britain and situated in the Mediterranean Sea 40 miles off the coast of Asia Minor. It is the third largest island of the Mediterranean and for many years until 1914 was administered by Great Britain under agreement with the Sultan of Turkey. On the outbreak of war with Turkey in that year the island was annexed and since has been governed by a High Commissioner, who is assisted by an Executive Council of six and a Legislature of 18 members. The electors are British subjects, or foreigners over 21, who have established a residence for five years and who have paid the "Verghis" tax.

The area of the island is 3,584 square miles with a population of 310,808 in 1921. The chief towns are Nicosia, the seat of the government (18,461); Larnaca (10,652); Limasol (11,843), and Famagusta (6,300). Of the population about 220,000 are Christians and 55,000 are Moslems. Each race in the island has its own schools. In 1920 there were 501 Greek-Christ-

tian, 231 Moslem, 4 Maronite and 3 Armenian primary schools with a total teaching staff of 964 and a total enrollment of 42,397. There are three gymnasia, one commercial lyceum, three Greek high schools and two Moslem high schools.

In 1921 the budget was balanced at \$3,453,890. The public debt in 1922 was \$1,107,170.

Cyprus is well adapted to agriculture. It produces wheat, barley, oats, cotton, olives, fruits, linseed, wool, hides. Sponge fishing is carried on. Gypsum and marble are found in abundance. Copper and asbestos are being developed.

The imports in 1920 amounted to \$10,000,000 and the exports to \$6,500,000. The chief imports that year were beans, peas, butter, coffee, flour, fish, sugar, rice, leaf tobacco, hides, petroleum, cotton goods, fertilizers, silks, glassware and medicines. The chief exports the same year were lemons, oranges, raisins, cotton, raw silk, asbestos and gypsum.

There are 76 miles of narrow-gauge railways and 750 miles of good roadways, 245 miles of telegraph lines and telephones.

The High Commissioner in 1922 was M. Stevenson, C.M.G. The Chief Secretary was J. C. D. Fenn.

CYRENAICA. See LIBYA.

CZECHOSLOVAKIA, a republic of Central Europe, the modern history of which as a separate state dates from 1918, when it was formed from out the remnants of the old Austro-Hungarian Empire. It consists of Bohemia, Moravia, Slovakia, Silesia and Ruthenia (Sub-Carpathian Russia). The boundaries have been defined by the peace treaties following the Great European War, with the exception of a few districts in which plebiscites were held.

Area and Population.—The area of the new republic is 54,264 square miles, of which 20,106 are in Bohemia, 8,615 in Moravia, 18,933 in Slovakia, 4,903 in Ruthenia and 1,707 in Silesia. The population, according to the recent census, was 13,595,816, of whom 6,000,000 are Czechs, 3,700,000 Germans, 1,200,000 Magyars, 1,700,000 Slovaks and about 550,000 Poles and Ruthenians. The populations of the largest cities are: Prague, 676,476; Brno, 221,422; Plzen, 88,447; Bratislava, 93,329, and Kosice, 52,699.

Education.—Between the ages of six and 14 education is compulsory. There are elementary and advanced public schools, secondary Latin and technical schools, universities and higher technical schools, and trade and arts, commercial, mining, agriculture and other schools. According to the latest available data there are 13,417 elementary public and private schools, attended by 1,931,690 pupils and 1,411 advanced public and private schools with an attendance of 254,133 pupils.

Of the elementary schools 64 per cent are Czechoslovak; over 25 per cent are German; 6 per cent Magyar and the remainder Ruthenian, Polish and Rumanian. About 70 per cent of the advanced schools are Czechoslovak and 28 per cent are German, leaving 2 per cent divided between the Magyars, Poles, Ruthenians, etc. There are 60 gymnasia, 105 real gymnasia, 33 higher gymnasia, 80 real schools, 22 lycums

for females and 68 teachers' institutes. These higher schools had at the last enumeration 97,329 pupils, including 22,397 females. There are universities at Prague, Brno and Bratislava. At Prague there are two institutions of which the Czech University was founded in 1348. It has 8,770 students, of whom 1,562 are females. The German University of Prague has 3,668 students, including 394 females. The Czech University of Brno has 957 students, of whom 69 are females, and the Slovak University of Bratislava has 247 students, including 28 females. There are about 12,200 students enrolled in the technical high schools.

Constitution, Government, Etc.—On 29 Feb. 1920, the National Assembly of the Czechoslovak nation passed the Constitution of the Republic, under the terms of which the state is a democratic republic with an elected President as its chief magistrate. The National Parliament is composed of a Chamber or Lower House, the members of which, 300 in number, are elected for a six-year term, and a Senate of 150 members, chosen for eight years. The President is elected every seven years by both chambers in joint session. The President with the consent of the National Parliament may declare war; he appoints the higher officials and in general exercises all the powers of an executive. Freedom of the press and of speech are guaranteed by the Constitution and there are certain constitutional safeguards thrown about the racial minorities in the realm by which their schools are assured freedom and liberty of action. The franchise is enjoyed by all citizens, male and female, over 21 years, and all citizens over 30 are eligible for election.

Courts.—All matters affecting appeals from decisions made by state officials are handled by a special Administrative High Court. There are special courts to deal with commercial, industrial and other matters. There are 423 district courts and 37 county courts, and four high courts, one each at Prague, Brno, Bratislava and Kosice. There are in addition the Supreme Court of Justice and the Court of Cassation at Brno and a Penal Tribunal at Prague. There are three special district courts and 423 district courts.

Banking and Currency.—There are 36 commercial banks in the republic with an aggregate paid-up capital of 1,327,300,000 Czechoslovak crowns, reserve funds amounting to 607,838,000 crowns, and total deposits of over 16,000,000,000 crowns. The aggregate assets of these banks amount to 20,557,577,000 crowns. The chief credit institutions of the country are the Caisses Raiffeisen, the local agricultural credit banks, the municipal savings banks, the civil credit banks and the postal money order office. There are several joint stock banks also in each district. There is being organized a national joint stock bank with a capital of 75,000,000 francs gold, and 75,000 shares of 1,000 francs each. The president of the board of directors is appointed by the President of the Republic for a term of six years. In 1922 it was proposed to replace the krone (crown) currency by a franc currency at the rate of three kronen to one franc. The note circulation on 1 July amounted to over 11,000,000,000 kronen.

Finance.—The Minister of Finance of Czechoslovakia in October 1922 presented to the National Assembly the following estimates of the budget for 1923:

	Crowns
Expenditures:	
Ordinary.....	13,605,000,000
Extraordinary.....	5,722,000,000
Total.....	19,377,000,000
Revenues:	
Ordinary.....	17,961,000,000
Extraordinary.....	851,000,000
Total.....	18,812,000,000
Deficit.....	565,000,000

Amortization and interest payments on the state debt amount to 2,790,000,000 crowns; this includes payment of interest on the American credit as well as interest and principal on the national liberty loan. Expenditures for national defense are to be less than those for 1922 by 333,000,000 crowns, for foreign affairs, 85,000,000 crowns, and for education, 95,000,000 crowns. Capital improvement expenditures amount to 3,000,000,000 crowns, which sum is to be borrowed.

Railway profits are estimated at 746,000,000 crowns, and postal and telegraph at 282,000,000 crowns. Customs profits are estimated to be greater by 148,000,000 crowns, and the revenue from the tobacco monopoly by 57,000,000 crowns. The revenue from taxes will be decreased by 62,000,000 crowns because of a loss of 400,000,000 crowns from the turnover tax and 400,000,000 crowns from the coal tax.

The debt of the republic is divided as follows:

To the United States.....	\$57,744,750
To France.....	francs 135,051,473
To Italy.....	lire 186,000,000
To Great Britain.....	pounds 304,106
Czechoslovakia's share of the pre-war debt of Austria-Hungary.....	gold francs 1,200,000,000
and.....	crowns 4,800,000,000
Tax of liberation.....	francs 750,000,000
Internal debt.....	crowns 12,800,000,000
Loans.....	crowns 3,000,000,000
and a fourth loan the amount of which is not stated.	

The latest official statement of the debt of the new republic gave the total indebtedness as follows:

Foreign debt.....	francs 3,500,000,000
Internal debt.....	crowns 25,000,000,000

Army.—There is universal military service for men between the ages of 20 and 50. The period of active service is 14 months. In peace time the army numbers 150,000 men, but during mobilization and war all citizens from 17 to 60 are obligated to do all that is possible for the national defense.

Agriculture.—This industry is well developed and intensive crop-raising is practised. Wheat, rye, barley, oats, potatoes and sugar beets are the principal crops. Wheat, rye, barley and oats are produced in about equal quantities to the amount of 1,200,000 metric tons annually. The sugar-beet crop is the foundation of a great sugar industry, furnishing raw material to 175 factories, producing about 700,000 metric tons of sugar annually. About 5,000 tons of hops of fine quality are grown. Apples, pears, and the stone fruits are raised in large

quantities and are an important item in the country's export list. The latest live stock census listed 4,213,454 cattle, 2,015,211 pigs, 1,174,045 goats, 581,257 horses and 975,889 sheep. This is much less than the normal numbers of these herds which were depleted by the war.

Forest and Mineral Products.—About 32 per cent of the area of the republic is covered with forests, which yield annually 565,024,000 cubic feet of timber. The coal mining industry gives employment to 110,233 persons in 366 mines producing 20,000,000 tons of lignite and 11,000,000 tons of hard coal yearly. Gold, silver, copper, lead, rocksalt, graphite, garnets and iron are mined also.

Industries.—The latest industrial census listed 8,833 factories, of which 1,999 were textile mills, 1,755 glass works, 1,358 food products, 674 for furniture, 1,187 metal and machine works, 458 chemical works and 297 paper mills.

Trade and Commerce.—The foreign trade of Czechoslovakia for 1921 showed a favorable balance of 4,876,833,254 crowns, which was an increase of 691,830,453 crowns over that for 1920, according to statistics issued by the Government Statistical Bureau. In 1921 imports were valued at 22,435,356,046 crowns and exports at 27,312,189,300 crowns. If these figures are compared with those for 1920, when the imports were valued at 23,384,411,785 crowns and the exports at 27,569,414,586 crowns, there appears a decrease in the imports of 949,055,739 crowns, or 4 per cent, and in the exports of 257,225,286 crowns, or about 1 per cent. Total exports in 1922 amounted to 9,455,023 metric tons as against 9,742,725 in 1921. Total imports were 3,164,593 metric tons as compared with 3,991,174 metric tons in 1921.

Austria, Germany, France and Hungary are the principal markets for the products of Czechoslovakia, while Germany, the United States, and Austria supply most of the imports.

Transportation and Communication.—The state owns 5,105 miles of the total of 8,497 miles of railways in the country, while 3,320 miles are privately owned and 72 miles are the property of foreign states. About 1,000 miles are double-tracked, of which 801 miles are on the state railways. In the years immediately preceding the war 96,000,000 passengers and 57,000,000 tons of freight were carried annually on the main lines of railways in what is now the Czechoslovak Republic, the receipts from this traffic amounting to 588,000,000 crowns. In 1920 146,000,000 passengers and 46,000,000 tons of freight were hauled, the receipts therefrom amounting to almost 3,000,000,000 crowns.

The year 1921 witnessed a consistent growth in passenger traffic, over 159,000,000 having been carried; but freight tonnage fell off to slightly over 43,000,000 tons, the gross receipts for that year having been 3,873,499,000 crowns. It will be noted that while there was a substantial increase in passenger traffic, as compared with pre-war years, the freight tonnage was considerably lower. It was expected that this condition would continue in 1922, since the passengers carried in the first six months of 1922 numbered over 80,000,000, while the freight

traffic was only about 70 per cent of the pre-war tonnage.

Freight and passenger rates on the railways of Czechoslovakia are among the highest in Europe, it being computed that they are 13 times greater than those in Germany. There has been considerable agitation for a reduction, although the officials point out that the present basis of rates is the reason for their administration showing a surplus, as against the deficit constantly piling up in Germany. The Danube and the Elbe are important as commercial highways. There are in the republic 3,810 post offices, 2,228 telegraph offices, 54,156 telephone stations.

Religion.—There are 11,675,187 Roman Catholics, 592,699 Greek Catholics, 929,203 Protestants, 17,120 Old Catholics, 361,990 Jews and 3,051 Greek Orthodox adherents in the republic.

History.—The republics of Austria and Czechoslovakia negotiated a working agreement or entente, under which contentious questions will in future be referred to the League of Nations. The two countries promise one another mutual support in maintaining the treaties of Saint Germain and the Trianon. The agreement is for a period of five years. There was an acute housing shortage at the beginning of the year, but relief came promptly from the Government which laid out 1,032,000,000 crowns for the construction of 4,553 houses with accommodation for about 13,000 families. The Franco-American Oil Company secured from the Government a monopoly for oil prospecting and well sinking and also a trading concession for 30 years. Under the terms of the agreement a local company is to be created in which citizens of the republic will be majority stockholders.

A bill passed by the Chamber of Deputies in January forbade the sale of intoxicants of any kind to persons under 16 years of age. Persons who have reached the age of 16 may purchase wine or beer, but for other intoxicants the age limit is placed at 18 years. The same bill permits only beer and wine at all public dances. Landlords of licensed premises, their employees and representatives, and the parents or guardians of young people are responsible for the observance of the law.

An amnesty proclamation by President Masaryk in the spring set at liberty most of the Communists imprisoned as a result of the abortive uprising and strike in December 1920.

Savings bank statistics given out in April 1922 showed that 549,000,000 crowns were deposited, 358,000,000 crowns withdrawn, making a total saving for the year 1921 of 190,000,000 crowns. Premier Benes took a prominent part in the Genoa Conference. He rendered valuable assistance in arranging the preliminaries of the Conference and helped smooth out the differences between the French delegation and David Lloyd George of Great Britain.

The House of Deputies approved a British loan of \$50,000,000 for a term of 25 years at 8 per cent.

Aerial passenger service was organized during the year between the cities of Prague, Vienna and Bratislava. On 5 June a provisional treaty was signed at Prague by Czechoslovakia

and Soviet Russia and also with Ukraina. The text contains a declaration of neutrality and diplomatic and consular arrangements. Recognition was reserved for future consideration as well as the questions in regard to the property of Czechoslovakians sequestered in Russia. Citizens of Czechoslovakia are permitted to travel in Russia and to do business there.

Much trouble was experienced in June with the German Nationalists in the Parliament at Prague, the latter threatening to expel the Czech minorities from northern Bohemia. Poland concluded an agreement with Czechoslovakia in July relative to the organization of a medical service on the frontier. An economic and commercial treaty was concluded with the Ukraine and ratified in August, providing for neutrality in case of war between one of the parties and a third power and for the re-establishment of diplomatic relations. Each party to the agreement foreswore propaganda in the other's territory. The Land Reform Act passed by the Parliament provided for the taking over of 17 per cent of all fallow land, 14 per cent of meadow, 12 per cent of gardens, 12 per cent of vineyards, 17 per cent of pastures, 50 per cent of lakes and 50 per cent of forest lands. The autumn fair was well attended at Prague on 4-9 September there being 2,500 exhibitors and 200,000 visitors. The chemical industries, paper and paper pulp, glass, porcelain and ceramics were especially well represented. On 3 October Eduard Benes retired from the premiership and took the portfolio of Foreign Affairs in the Cabinet of his successor, Anthony Svehla, the leader of the Agrarian movement opposed to the Industrialists, who appeared to depend too much on Germany. In the autumn a committee of Czech noblemen was formed to contest the expropriation of their estates, alleging that the compensation allowed was but one-tenth of the real worth of the land. The Government of the Republic made a claim upon

Japan for 860,000 yen for arms and munitions belonging to the Czech troops stationed in Siberia until 1920. It was alleged that these arms had been sold to the Tschun of Manchuria, Gen. Chang Tso-lin. On 3 October the Government of Japan promised an investigation. The Foreign Minister, Dr. Benes, met the Italian Foreign Minister at Venice on 10 October to discuss the Balkan situation brought about by the reappearance of the Turk in Europe and to oppose the proposed Balkan Federation. An agreement was concluded on 31 August with Yugoslavia binding both republics to common action on international questions affecting their interests. Towards the close of the year it appeared that the policy of the new Cabinet would be the continuation of that of the former Premier. The republic is to be divided into administrative districts for facilitating internal administration, while alliance with Yugoslavia and Rumania assured the peaceful development of the nation's foreign trade. Drastic retrenchments marked the economic policy of the Government at home where the revenue was made to cover the normal expenses. The tariff policy of the Government appeared to be a modified free trade. The Land Office estimated that the larger part of the great estates had passed into the hands of the small proprietors at the close of the year. The currency situation improved throughout the year, the paper circulation being reduced by nearly 2,000,000,000 crowns in the year ended 23 September. On that date the paper in circulation amounted to 9,664,517,000 crowns. On 23 November the note circulation amounted to 9,500,000,000 crowns. The metallic reserve was 819,000,000 crowns; the total reserves, including the metallic reserve, commercial paper, foreign securities, etc., amounted approximately to 46 per cent of the circulation. The New York cable rate for one crown was \$0.03156 on 29 Nov. 1922.

D

DAHOMY, a French Colony of West Africa which reaches from the French Military Territories southward to Togoland and Lagos and Nigeria. Its coast line is only 70 miles but it stretches out to the northeast into a wide hinterland. The given area of the colony is 42,460 square miles with a population of 860,590, of whom only 600 are Europeans. Porto Novo is the seat of the government. The inhabitants are of pure negro strain and along the coast are good agriculturists. Indian corn, manioc, potatoes and yams are the chief products. Cotton is being introduced in recent years. The forest products are kernels and palm oil. Roads are being constructed for motor traffic and there is a short line of railway of metre gauge. The yearly budget of the colony averages 8,000,000 francs. Palm kernels and palm oil are the chief exports, the total value of which in 1920 was 63,650,651 francs. In the same year the imports were valued at 93,665,790 francs. Most of the foreign trade is with France but the United Kingdom also has a considerable share.

DAIRIES, Co-operative. See Co-OPERATIVE MOVEMENT.

DAIRY CATTLE. See AGRICULTURE IN THE UNITED STATES.

DAIRYING. See AGRICULTURE IN THE UNITED STATES; Co-OPERATIVE MOVEMENT and FARM PRODUCTS.

DAIRY PRODUCTS, Value of, in the United States. Dairy products in 1922, at farm prices, had a gross value of \$2,090,455,000, according to estimates by the United States Department of Agriculture. The value of dairy products in 1921 was placed at \$2,352,000,000, and in 1920, the top year in values, at \$3,018,000,000. Whole-milk sales from farms and consumption on farms comprised 65 per cent of the total value of all dairy products in 1922, and are given a value of \$1,357,000,000. In 1921 the value of such whole milk was placed at \$1,567,000,000, and in 1920 at \$1,911,000,000. Farm-made butter had a value of \$220,000,000 in 1922, compared with \$242,000,000 in 1921 and with \$366,000,000 in 1920. The 1922 value of cheese made, cream sold, butter fat sold, buttermilk, whey, and skim milk, is placed at \$513,018,000, compared with \$542,817,000 in 1921 and with \$740,736,000 in 1920. The farm price of whole milk was 19.09 cents per gallon in 1922, compared with 22.19 cents in 1921, and with 30.10 in 1920. The farm price of butter was 35.23 cents in 1922, compared with 37.16 cents in 1921, and with 54.25 cents in 1920. In the first nine months of 1922 production of all classes of condensed and evaporated milk amounted to 1,087,912,000 pounds, as compared with 1,160,644,000 pounds in 1921.

Heretofore, no estimates of the values of buttermilk, skim milk, and whey on farms have been included in the total value of dairy

products. Based on feeding value, these products had a value of \$260,600,000 in 1919, of \$230,000,000 in 1920, and of \$99,700,000 in 1921.

Exports.—The dairy products exported from the United States during the first 11 months of 1922 had a value of \$23,429,416 as compared with exports valued at \$41,264,436 shipped out during the corresponding period of 1921. Milk and cream exported during the first 11 months of 1922 totaled 181,633 gallons, valued at \$121,934. Condensed, evaporated and powdered milk exported during the first 11 months of 1922 totaled 183,550,267 pounds, valued at \$18,248,855 as compared with 276,641,680 pounds, valued at \$35,180,908 exported during the corresponding period of 1921. Germany in 1922 was the United States' best customer for condensed, evaporated and powdered milk, having taken 31,274,523 pounds during the first 11 months of the year. In the corresponding period of 1921 she took 52,796,918 pounds. Exportations to the United Kingdom declined from 71,417,489 pounds in the first 11 months of 1921 to 21,164,834 pounds in the corresponding period of 1922. During the 1922 period mentioned, Latvia took 20,754,156 pounds, Russia in Europe took 19,765,425 pounds, Cuba took 17,853,595 pounds. Exports of butter during the first 11 months of 1922 totaled 10,575,819 pounds, valued at \$3,902,937 as compared with 7,575,529 pounds, valued at \$3,079,927 exported in 1921. Aside from Cuba, Haiti and the other West Indies, Mexico was America's best customer for butter in 1922, having taken 818,172 pounds. Cheese exported during the first 11 months of 1922 totaled 4,699,246 pounds, valued at \$1,155,690, compared with 11,332,582 pounds, valued at \$2,595,620 exported in the corresponding period of 1921. Cuba took 1,269,307 pounds and Mexico took 1,241,472 pounds.

DAKOTA WESLEYAN UNIVERSITY, a Methodist-Episcopal co-educational institution, founded in 1883 and located at Mitchell, S. D. It has a faculty of 27 members, and in 1921-22 had an enrollment of 718 students and an income (college only) of \$73,891.34. Its property is valued at \$490,266.42. Edward Delor Kohlstedt, is president.

DALLAS, University of, a non-sectarian educational institution for men, founded in 1904 and located at Dallas, Texas. In 1922-23 it had a faculty of 18 members, 172 students, property valued at \$400,000 and an income of \$25,000. Dr. W. P. Barr, C.M., is president.

DALMATIA, a former crownland of Austria and since 1918 a province or district of the Kingdom of Serbs, Croats and Slovenes (Yugoslavia). Its area is 5,090 square miles and its population numbers 621,503, nearly all of whom are Croats and about 500,000 are Catholics, about 100,000 being Greek Orthodox. Zara is the capital with a population of 14,000.

Spalato, Ragusa and Cattaro are important sea-ports. After the World War disputes arose with Italy regarding the boundaries of the territory, but these were settled by the Treaty of Rapallo. The district borders the eastern littoral of the Adriatic Sea and on the east is itself bordered by Bosnia and Herzegovina.

DAMS. The Geological Survey reported in 1922 that there were 3,116 water-power plants of 100 horse-power capacity or over in the United States. As nearly all of these involve a dam, and some of them two or more dams, it follows that there are over 3,000 large dams in the country for water-power, without counting those built for other purposes. New York State leads in this development, with 1,292,000 horse-power, but this is because the Niagara equipments are figured in, and these do not involve the dams here considered. California is the real leader, with 1,149,000 horse-power, followed by Washington with 459,000, Maine with 450,000, and Montana with 344,000. The total horse-power of these plants is 27,943,000. But in the spring or flood season the total capacity rises to about 54,000,000 horse-power. Perhaps a score of the larger dams connected with this water-power development are of general interest, but one stands out from all the rest, as demonstrating a new principle in hydraulic engineering, and that is the Mitchell dam of the Alabama Power Company, not far from Birmingham, being a part of the Coosa River development. This dam has what is termed a "backwater suppressor" which actually increases the effective head of water for the turbines, the total gain depending somewhat on the amount of water flowing. The "head," or height of water that falls into the turbines or water-wheels, together with the quantity of water, determines the amount of power that is obtained for useful work. But the higher a dam is built the stronger it has to be all over, and the more it costs, so the gaining of perhaps a couple of feet head, at no appreciable cost for the equipment, is a great achievement. It is the invention of A. G. Thurlow, chief engineer of the Alabama Power Company.

At the foot of a dam is usually a pool of water, and as the water released from the turbines comes rolling on, it pushes back the water of the pool, forming a more or less permanent wave, whose effect is to raise the general level of the water in the pool, and thus to cut off something from the effective height or head of water that can be used on the turbines. Engineer Thurlow's "backwater suppressor" lowers this wave, and so leaves a greater effective working head. The energy of the spillway water is used to reduce the height of the tailwater. This improvement in dam construction is such a pronounced success, not involving added cost, that it will doubtless become standard practice. The Mitchell dam is one of the larger reservoirs of the country, being 95 feet in height, 1,200 feet long, and costing \$1,838,800. The entire Coosa River development is to cost \$11,000,000.

Another new and somewhat similar construction, for a different purpose, characterizes the new dam at Dayton, Ohio. Through dear experience the people of the locality dread the possibility of a broken dam and a flood. To relieve the pressure in the dam, in time of high

water and flood conditions, large twin conduits are provided to let out the water from near the foot of the wall. At high water it comes through these conduits with such prodigious force that the engineers reckoned it equaled six 50-car freight trains, running at 37.5 miles an hour. The problem was to check this so it would not tear to pieces everything in the vicinity. The water spilling from the conduits was led down a constantly widening channel, with a rough stepped floor and sides, so that this tremendous energy was dissipated in friction over a large area. The construction has been named a "hydraulic jump," and it is calculated that had it been in the dam at the time of the 1913 flood, it would have relieved at least 14 feet of the height of the accumulated water, and avoided the disaster.

About the year 1912, the engineering world was agog with the wonderful water-power project of the Southern California Edison Company, which developed the large water supply at Big Creek, and carried the power 240 miles to Los Angeles by means of a 150,000 volt transmission line. This superb accomplishment has already been discounted in the march of progress, and the company is reconstructing the line to operate at 220,000 voltage. The system of dams has been enlarged, and a new development begun, which will cost \$61,000,000 by the time it is completed in 1930. The horse-power developed for sale is to total 545,000, so that the cost will be \$112 per horse-power, slightly less than the average for the United States, excluding Niagara development. The largest dam of the Big Creek plant, now under way, is a multiple arch structure, 180 feet high and 2,300 feet long, the cost to be \$4,310,000. The next three in size are to cost respectively, \$2,650,000, \$2,260,000 and \$2,000,000.

California has another notable water-power development undertaken by the San Joaquin Light and Power Company. It is to include 10 dams, of a total cost of \$17,330,000. The highest of these is the Bear Division dam—325 feet by 1,385 length, to cost \$4,200,000. The largest is the mammoth Wilson dam, that has been widely written up. The concrete dam wall is 250 feet high, and 6,475 feet long, involving an outlay of about \$10,000,000. This considerably exceeds in size the famed Roosevelt dam in Arizona, and the great Assouan dam on the Nile. It is the largest in the world, though its cost is exceeded by the Ashokan dam at Catskill, N. Y., the Keokuk, Iowa, dam, on the Mississippi, the Ken-sico dam of the Croton watershed, supplying New York City, and the Assouan dam. The Keokuk dam, constructed by the Mississippi River Power Co., is the largest low-head dam in existence, and cost \$24,000,000. Though the masonry is 53 feet high, the water head is but 32 feet. It is near the Des Moines Falls, passing 200,000 cubic feet of water per second at low water and 375,000 feet at high water. The power house is to consist eventually of 30 units of 10,000 horse-power each. The territory served is Saint Louis, Alton, Hannibal, Quincy and smaller cities.

The Gilboa dam of the Catskill water supply system, in New York, is a near rival of the famed Ashokan dam. It is located on Schoharie Creek, 156 miles from the other terminal of

New York City's high pressure water system on Staten Island. It forms a lake $5\frac{1}{2}$ miles long by 0.7 wide, with an extreme water depth of 150 feet, and an average of 57 feet. The shore line is 16.5 miles and the acreage 1,145. The masonry portion of the dam is 180 feet from bedrock, and 1,300 feet long, but there is an extension of 700 feet, which is an earth dam, strengthened with a core wall. It is built with contraction joints at intervals, these being filled with copper sheeting 7 inches wide by 1-16th thick. The dam was nearly half done in the early summer of 1923, and is to cost \$7,000,000. It is designed for a 20,000,000,000 gallon service, and the excess water flows down a stepped canal that falls 150 feet to the Shandaken tunnel. This tunnel is a notable engineering feat, being 18 miles in length—longer than any of the tunnels under the Alps, though of less diameter, being 11.6 x 10.3 feet.

Other interesting dams in course of construction are the Hetch Hetchy dam, in California, where the masonry was sunk 72 feet to reach bedrock, giving an extreme height to the crest of 312 feet; the dam at McConnellsville, O.; others at Cody, Wyo., Missoula, Mont., Monticello, Utah, Paisley, Ore., and a series along the Colorado River, the largest at Glen Canyon; also a series of five on the south fork of the American River, in California. At Muscle Shoals, which has been so advertised by the Henry Ford offer, the Alabama Power Company has offered the Government to complete the large dam with an initial unit of 240,000 horse-power, and to give the Government 100,000 of this power for free use for fertilizers and munitions. Despite all the talk about spoiling the Falls of Niagara, a license has been granted for 187,500 increase of horse-power development there. In all, the Federal Power Commission has issued licenses in recent years for a total of 150,000,000 horse-power development, involving the construction of over a hundred large dams.

For irrigation purposes the United States Government completed during the War period two more great dams, making a total of six in what used to be called the Great American Deserts, meaning the region of light rainfall, extending through Idaho, Nebraska, Wyoming, New Mexico, Arizona and part of Texas. These two are the Arrowrock, on the Boise River, in Idaho, with a height of 307 feet by 1,100 length, and a storage capacity of 91,230,000,000 which cost \$4,500,000, and the Elephant-Butte, on the Rio Grande River, partly in New Mexico and partly in Texas, which is 306 feet high, by 1,674 length of masonry, and has the greatest storage capacity of any dam reservoir in the world, 759,605,000,000 gallons, yet its cost was only \$5,015,000. Two very large dams are projected in Egypt, one at Makwar, on the Blue Nile, the other 24 miles south of Khartoum, on the White Nile. A loan of £7,000,000 is being negotiated with Great Britain to carry them through.

CHARLES H. COCHRANE.

DANIEL BAKER COLLEGE, a Southern Presbyterian coeducational institution, founded in 1889 and located at Brownwood, Texas. In 1922-23 it had a faculty of 17 members, 250 students, and property valued at \$243,-

710, with endowment of \$250,000. S. E. Chandler, D.D., is president.

DANZIG, a free city, constituted under article 102 of the Treaty of Versailles, and placed under the protection of the League of Nations. The city has an advantageous situation at the mouth of the Vistula and has always been a great shipping centre. The freedom of the city was proclaimed 15 Nov. 1920 and at the same time a treaty was concluded with Poland under the terms of which Danzig and Poland constitute a single customs territory. In 1922 the Polish-German customs frontier line was extended to the Baltic, thereby making a single customs administration for the free city of Danzig and the Republic of Poland. A Constitution was drawn up under the terms of the Versailles treaty and approved by the League of Nations on 17 Nov. 1920. This document provides for a Chamber of 120 members, elected for four years and a Senate of 20 members, a President and Vice-President. The President and nine senators are elected by the Chamber for a term of six years, the Vice-President and the remaining senators are elected for the duration of the Chamber. The six-year senators are a special class known as main office senators and they may not engage in any other office or employment during their term as senators. The President supervises the entire administration. A plebiscite may be demanded by 20 per cent of the voting population. The free city has an area of 709 square miles and a population of 352,380. About 26,417 of the population are Poles. For purposes of local government the territory of the free city is organized into five cities, 69 estate districts, and 251 rural communes. The populations of the principal divisions are as follows:

Cities	
Danzig.....	194,953
Marienburg-Kalthof.....	1,791
Neuteich.....	2,395
Tiegenhof.....	2,834
Zoppot.....	18,397
Communes	
Ohra.....	12,347
Oliva.....	11,706
Praust.....	3,070
Bürgerwiesen.....	2,324
Stutthof.....	2,337
Emaus.....	2,321

There are several bathing resorts within the territory of the free city. The city of Danzig proper has 38 primary schools with 540 teachers and 24,288 pupils, three secondary schools with 46 teachers and 1,858 pupils, two girls' high schools with 1,028 pupils, three boys' high schools with 1,436 pupils, and a technical high school with 65 teachers and 864 students. The debt of the city in 1922 amounted to 43,034,647 marks. The budget is approximately 40,000,000 marks yearly. There is a large trade in grain, lumber and sugar. For an extended discussion of the new relations of Danzig consult Ashkenazy, Simon 'Danzig and Poland.' For the history and antecedents of the city see article **DANZIG** in the Americana.

DARTMOUTH COLLEGE, a non-sectarian educational institution for men, founded in 1769 and located at Hanover, N. H. In 1922-23 it had a faculty of 175 members, 2,075

students, property valued at \$3,000,000 for plant, exclusive of dormitories, endowment of \$6,000,000 and an income of about \$1,000,000. Ernest Martin Hopkins, LL.D., is president.

DASHEEN, a potato-like vegetable introduced into the Southern States from the tropics a few years ago. It is increasing in popularity and annual shipments to northern markets are estimated to be about 10 carloads. Between 2,000 and 3,000 Southern farmers, mostly in Florida, now grow the vegetable. It is said to have a flavor suggestive of chestnuts and comes on the market toward the end of November. Experiments in growing dasheen have been carried on by the United States Department of Agriculture, which also has devised numerous methods of preparing the vegetable. Although quite similar in composition to the potato, it is said to contain less water and a higher percentage of protein and carbohydrates.

DATE SCALE. See HORTICULTURE.

DAUGHERTY, Harry Micajah, United States Attorney General: b. Washington Court House, Ohio, 26 Jan. 1860. After attending the high school of his native town, Mr. Daugherty studied law at the University of Michigan from which he was graduated with the degree of LL.B. in 1881. He returned to his old home and practised there until 1893 when he moved to Columbus, Ohio, which has continued to be his home. From 1902-21 he was senior member of the firm of Daugherty, Todd and Rarey. Mr. Daugherty served two terms (1902-04) as a member of the Ohio House of Representatives. In 1920 he was campaign manager for President Harding and was made Attorney-General of the United States with a seat in the President's Cabinet on 5 March 1921. Having previously offered a resolution calling for the impeachment of the Attorney General on the ground of unfitness to hold his office, Representative Keller, of Minnesota, on 1 Dec. 1922, submitted to the Judiciary Committee of the House of Representatives a lengthy document containing 14 allegations against Mr. Daugherty. Among other charges the Keller allegations asserted the Attorney-General had refused to prosecute violations of the anti-trust laws, that he had shown favoritism toward corporate interests, including the firm of J. P. Morgan and Company, and that he had used Government detectives to shadow those who had criticised him. Hearings were begun but on the third day Mr. Keller withdrew from the case and thereafter ignored a subpoena commanding him to appear before the committee. On 9 Jan. 1923, the Committee, by a vote of 11 to 3, recommended to the House the dismissal of the impeachment proceedings. The resolution stated that the committee had made an examination touching the matters charged in proceedings against Mr. Daugherty to ascertain if there was any probable ground to believe that any part of them were true, but that "on consideration of the charges and the evidence obtained" it did not appear that there was any ground to believe that the Attorney General, has been guilty of any high crime or misdemeanor "requiring the interposition of the impeachment powers of the House."

DAUGHTERS OF THE CONFEDERACY, United. The United Daughters of the Confederacy was organized in Nashville, Tenn., 10 Sept. 1894, by Mrs. C. M. Goodlet (recognized as the founder), and was incorporated 18 July 1919 in the District of Columbia. The first convention was held in Nashville, 30 March 1895, and the last in Birmingham, Ala., 14 to 18 Nov. 1922, making the total number of annual conventions held 29. There have been 16 presidents-general, of whom 11 were alive 1 Jan. 1923. The objects of the organization are, historical, memorial, benevolent, educational, and social. Twenty prizes are offered to stimulate historical work, varying from medals to \$100 in gold. The organization holds \$99,666 in scholarships, and has invested in United States government bonds \$68,000 for scholarships for World War veterans. It has organizations in 34 States in the Union, and a chapter in Paris, France, composed entirely of French citizens with the Marquise de Courtivron, the daughter of Major-General de Polignac, as its president. There are 1,160 chapters with an approximate membership of 80,000.

The present officers are (1922-23): President-general, Mrs. Livingston Rowe Schuyler, 520 West 114th street, New York City; first vice-president-general, Mrs. Frank Harrold, Americus, Ga.; second vice-president-general, Mrs. Frank Elmer Ross, Riverside Calif.; third vice-president-general, Mrs. W. E. Massey, Hot Springs, Ark.; recording secretary-general, Mrs. William E. R. Byrne, Charleston, W. Va.; corresponding secretary-general, Miss Allie Garner, Ozark, Ala.; treasurer-general, Mrs. J. P. Higgins, St. Louis, Mo.; historian-general, Mrs. St. John A. Lawton, Charleston, S. C.; registrar-general, Miss Ida F. Powell, 1447 East Marquette road, Chicago, Ill.; custodian of crosses of honor, Mrs. W. H. Estabrook, 645 Superior Avenue, Dayton, Ohio.

Work under way 1 Jan. 1923 was as follows: Completion of the Jefferson Davis monument at his birthplace in Kentucky; the amount to be contributed, \$50,000; naming and marking of the Jefferson Davis Highway, from the Atlantic to the Pacific; the building of a memorial chapel to Gen. Robert E. Lee at Washington and Lee University, Lexington, Va.; placing of a bust of Gen. Robert E. Lee in the British War College in England; construction of an elevator in the American Memorial Hospital at Neuilly, France, placing of a tablet to a "Faithful Slave" at Harper's Ferry; presentation of portraits, one of Commodore Matthew Fontaine Maury to Naval Academy, Annapolis, and one of Admiral Raphael Semmes to the Salle d'Alabama, Geneva, Switzerland; completion of the Cunningham Memorial Fellowship of \$5,000; erection of a boulder to Jefferson Davis at Point Isabel, Texas, to commemorate his service to the United States government during the Mexican War; the giving of an annual prize to a student at Annapolis in memory of Commodore Matthew Fontaine Maury; the collection of books for foreign libraries consisting of the Bodleian, Sorbonne, and the Library of Parliament at Ottawa, to which already have been sent several hundred vol-

umes; the giving of medals to commemorate the service of the descendants of Confederate veterans in the World War; assisting the Maury Monument Association in their work of erecting a memorial to Matthew Fontaine Maury in Richmond, Va.

MRS. LIVINGSTON ROWE SCHUYLER,
President-General.

DAVIDS, Thomas William Rhys, English educator and Orientalist: b. Colchester, England, 12 May 1843; d. Chipstead, Surrey, 26 Dec. 1922. He was known throughout the world as an authority on Pali and Buddhist literature. He was educated at Brighton and at the Breslau University where he studied Sanskrit. In 1866 he entered the Ceylon Civil Service. In Ceylon he began his Buddhist studies and published a book on the coins and medals of Ceylon. He also acted as district judge. Returning to London he studied law and was called to the bar, Middle Temple, in 1877. In 1882 he became professor of Pali and Buddhist literature at University College, London, and held this chair until 1912. In 1904-1905 he was professor of comparative religion at Manchester University. He founded the Pali Text Society of which he was president; was one of the founders of the British Academy; was an officer in the India Society; president of the Manchester Oriental Society; and from 1885 to 1904 was librarian of the Royal Asiatic Society. In 1895 he established the Oriental Translation Fund and in 1890 the Indian Text Series. He delivered the Hibbert Lectures in 1881.

His books include: 'Buddhism' (1878, 23d edition, 1914); 'Buddhist Birth Stones' (1880); 'Ancient Coins and Measures of Ceylon' (1877); 'Buddhist Suttas from the Pali' (1881); 'Questions of King Milinda' (1890-94); 'Hibbert Lectures' (1881); 'American Lectures' (1896); 'Vinaya Texts' (1881-85); 'Digha Nikaya' (1890 and 1892); 'Sumangala Viladine' (1886); 'Sacred Books of the Buddhists: Dialogues of the Buddha' (1899 and 1910); 'Buddhist India' (1903; 2d edition 1905), and 'Early Buddhism' (1908). His widow, Caroline Augusta, daughter of Rev. J. Foley, Fellow of Wadham, Oxford, is also an authority on Buddhism and Buddhist literature and has published 'Buddhist Psychological Ethics' (1910); 'Psalms of the Early Buddhists' (1903-13); 'Buddhist Psychology,' etc.

DAVIDSON COLLEGE, a Presbyterian, but non-sectarian, educational institution for men, founded in 1836-37 and located at Davidson, N. C. In 1922-23 it had a faculty, exclusive of the president, of 27 members, and 555 students. The cost value of its property was given as \$450,000 and its income as \$160,000 exclusive of \$50,000 spent by the government in connection with the Reserve Officers Training Corps. Its president is William J. Martin.

DAVIS, James John, United States Secretary of Labor: b. Tredegar, Wales, 27 Oct. 1873. His father and mother with their six children emigrated to Pittsburgh in 1881. Young Davis attended the public schools at Pittsburgh and at the age of 11 began work

in the iron and steel plant at Shannon, Pa., where he learned the puddler's trade. In 1892 he worked in an iron plant at Pittsburgh, and in 1893 in a steel and tin plate mill at Elwood, Ind. Joining the Amalgamated Association of Iron, Steel and Tin Workers of America, he was elected to various offices in that organization and is still a member thereof in good standing. Turning his attention to politics, he was elected City Clerk of Elwood, Ind. in 1898, and Recorder of Madison County, Ind., in 1902. In 1906 he joined the Loyal Order of Moose, and in 1907 became director general of the order, an office which he still holds. He was chairman of the Moose War Relief Commission which visited American, French, British, Belgian and Italian battle fields early in 1918, and after the armistice returned to the battle fields of Belgium and Germany, for relief purposes. President Harding made Mr. Davis a member of his Cabinet by appointing him Secretary of Labor and he took the oath of office 5 March 1921. He was a founder of the Mooseheart, Ind., Home and School; is president of the American Bond and Mortgage Co. of Pittsburgh, and is a Mason, an Odd Fellow, a member of the Knights of Pythias, the Elks and other organizations. He is a member also of the Americus, Republican, Duquesne, and Athletic clubs of Pittsburgh and of the National Press Club at Washington. In 1922 Mr. Davis published, 'The Iron Puddles; My Life in the Rolling Mills, and What Came of It,' with an introduction by Joseph G. Cannon.

DAVIS, Robert Courtney, American army officer: b. Lancaster, Pa., 12 Oct. 1876. He was graduated from the United States Military Academy in 1898 and 26 April of the same year was commissioned a second-lieutenant in the 17th Infantry. His successive promotions were as follows: First-lieutenant, 2 March 1899; captain, 28 Nov. 1902; major, 16 Sept. 1916; lieutenant-colonel (temporary), 5 Aug. 1917; colonel (temporary), 9 May 1918; brigadier-general, National Army, 26 June 1918. On 10 Aug. 1922, President Harding nominated him to be Adjutant-General with the rank of major-general. Shortly after the United States entered the World War, General, then Major, Davis was ordered to France. He arrived there 28 July 1917 and served from that date until 30 April 1918 as assistant to the Adjutant-General, acting as Adjutant-General from 27 Nov. 1917, to 22 Jan. 1918. On 1 May 1918 he was appointed Adjutant-General of the American Expeditionary Forces and served in that capacity until his return to the United States, 8 Sept. 1919. In addition to his services in the World War, for which he received the Distinguished Service Medal, General Davis participated in the campaign against Santiago de Cuba during the Spanish-American War, taking part in the battles of El Caney and San Juan. He served in the Philippines, 1899-1901, and was cited for gallantry displayed by him in actions against the Filipino insurgents. From 1901-05 he was an instructor at the United States Military Academy; from 1906-09 he served with the Army of Cuban Pacification; from 1909-11 was aide-de-camp to Major-General Barry; from 1911-12 was adjutant at the

United States Military Academy; from 1912-13 was adjutant of the 17th Infantry, and from 1914-16 was inspector and instructor of the Philippine Scouts. In 1917 he was assigned to duty in the Adjutant-General's office at Washington and served there until ordered to France.

DAVIS AND ELKINS COLLEGE, a Presbyterian co-educational institution, founded in 1904 and located at Elkins, W. Va. In 1922-23 it had a faculty of 12 members, 275 students, property valued at \$350,000 and an income of \$35,000. James E. Allen, A.B., is president.

DAVISON, Henry Pomeroy, American banker and philanthropist: b. Troy, Pa., 13 June 1867; d. Peacock Point, Locust Valley, Long Island, N. Y., 6 May 1922. He attended school in the town of his birth until he was fifteen years of age, thereafter taught for a while, and then entered Greylock Institute, South Williamstown, Mass. When he was 19 he went to work in his uncle's bank at Troy, Pa. Two years later he secured a position as runner with the Pequonock National Bank of Bridgeport, Conn., and within three years was promoted to receiving teller. In 1891 he went to New York and secured a position as teller with the newly formed Astor Place National Bank. He was made assistant cashier in 1894, cashier in 1895, vice-president in 1898, and president in 1899 of the Liberty National Bank. At that time he was one of the youngest bank presidents in America. In 1902 he resigned the presidency of the Liberty National Bank to become vice-president of the First National Bank. When, in 1907, one of the worst financial panics in the history of the country developed, Congress sought the advice and assistance of Mr. Davison whose ability as a financier already had attracted wide attention. He was appointed a member of the Special Clearing House Committee to investigate the affairs of banking institutions and to confer with the leading financiers as to ways and means of alleviating the situation. The following year he was appointed as expert on banking to the Monetary Commission sent by Congress to study financial conditions in France, Germany, and England with a view of securing information which could be used in improving conditions in America. Singling him out as a man of exceptional ability, the late J. Pierpont Morgan, in the fall of 1908, extended to Mr. Davison an invitation to become a partner in the firm of J. P. Morgan and Company from 1 Jan. 1909. The invitation was accepted and from that time until his death he was one of the most prominent and active members of that widely-known banking concern. In 1910 Mr. Davison was chosen by a group of American bankers as their representative at the Six-Power Chinese Loan negotiations which took place in Paris. When the conference met he was made chairman by the representatives of France, Great Britain, Germany, Russia and Japan. Shortly after the outbreak of the World War, J. P. Morgan and Company became the fiscal agent for the Allies in America. Through it enormous contracts for supplies were placed, huge loans, beginning with one for \$500,000,000 in 1915, were negotiated, and tremendous disbursements were made.

Much of the work fell upon Mr. Davison's shoulders and for over two years he was one of the busiest men in America. When America entered the World War, President Wilson drafted Mr. Davison and made him chairman of the American Red Cross War Council, in which position he continued to serve at a salary of \$1 a year, paying his own expenses, until 1919 with the rank of major-general. In as much as the Red Cross was burdened with the welfare not only of American soldiers and sailors, but also had to continue its assistance to other nations, the task imposed upon Mr. Davison was enormous. One of his first acts, as head of the Red Cross, was to launch a seven days' drive for \$100,000,000 for war relief work. So efficiently was the campaign conducted that the contributions made within the time limit totaled \$115,000,000. In 1918 a second drive inaugurated by Mr. Davison brought in contributions totaling \$170,000,000. The efficiency with which the Red Cross performed its tasks during and after the war testifies, perhaps, better than anything else to Mr. Davison's ability as an organizer and executive. Honors were bestowed upon him by France, which made him a commander of the Legion of Honor, the first American to be accorded this distinction; by King Albert of Belgium who conferred upon him the Order of Leopold, the highest Belgian decoration; and by the King of Italy who made him a Grand Officer of the Crown of Italy. In May 1919 Mr. Davison was elected chairman of the Governing Board of the World League of Red Cross Societies. During the war he and Mrs. Davison turned over to the Young Women's Christian Association their former home at 12 West 51st street, New York, as a "hostess house" for service men and their friends and relatives. Besides his connection with J. P. Morgan and Company, Mr. Davison was chairman of the executive committee and a director of the Bankers Trust Company of New York which he had helped to organize, a director of the First Security Company, a director of the American Foreign Securities Company, a director of the New Jersey and New York Railroad Company, a director of the Southwestern Development Company, and a director of the Guaranty Safe Deposit Company. He was also a trustee and treasurer of the American Museum of Natural History and treasurer of the National Institute of Social Sciences. He held memberships in the Century, Metropolitan, Union League, University, Jekyl Island, Piping Rock, New York Yacht, the Links, the National Golf Links of America, and the Nassau Country clubs. In 1913 the degree of LL.D. was conferred upon him by the University of Pennsylvania.

DAWES, Charles Gates, American financier: b. Marietta, Ohio, 27 Aug. 1865. He was graduated from Marietta College in 1884 and from the Cincinnati Law School in 1886, when he was also admitted to the bar. From 1887-94 he practised law in Lincoln, Neb., and then became interested in the gas business in Evanston, Ill., La Crosse, Wis., Seattle, Wash., and other cities. Becoming interested in politics he was executive of the McKinley movement in Illinois, resulting in McKinley instructions at

Springfield Convention in 1896. He was a member of the executive committee of the Republican National Convention in the campaign of 1896; Comptroller of the Currency in 1897-1902, and since 1902 has been president of the Central Trust Company of Illinois, which he founded in 1902. He is also president of the Rufus F. Dawes Hotel Association. He was major in the engineer ranks in 1917, went to France in July 1917 as lieutenant-colonel, railway engineers, and was appointed to the administrative staff of commander-in-chief, American Expeditionary Forces. In September 1917 he was made chairman of the General Purchasing Board and general purchasing agent, American Expeditionary Forces. He also became a member of the Liquidation Commission of the Allies. In 1919 he resigned from the army and returned to the United States. He was given D. S. M.; Order of Leopold from Belgium, and Legion d'Honneur from France. Mr. Dawes is known as the organizer of the first United States Government budget and one of the foremost authorities on banking and economics in the country. He is the author of 'The Banking System of the United States' (1892), and 'Essays and Speeches' (1915).

DAWSON, Arthur, American artist: b. Crewe, England, 9 March 1858; d. Richmond, Va., 27 August 1922. He was a son of the Rev. John Godfrey Dawson and was educated at Saint Saviour's College, from which he received the degree of A.B. Thereafter he studied art at the South Kensington School where he was a medalist. He also studied under David Law and William Morris. In 1887 he came to the United States and eventually became a naturalized citizen of the country. For 10 years he maintained a studio in Chicago and while living in the city founded the Chicago Society of Artists and served as chairman of the advisory committee of the Municipal Art Society. In 1898 he moved to New York where, for a number of years, he had charge of the restoration of pictures belonging to the New York Public Library, and became the official portrait painter of the United States Military Academy. His works include portraits of John Barton Payne, Generals Tillman, Barry, Biddle and McArthur, E. H. Harriman, Dr. Henry L. Smith, of Washington and Lee University, and Dr. George L. Denny, of the University of Alabama. He was a member of the Artists' Fund Society, of New York; the Lotus Club, New York, and the Authors' Club, of London.

DAY, James Roscoe, American educator: b. Whitneyville, Me., 17 Oct. 1845, d. Atlantic City, N. J., 13 March 1923. He was graduated from Bowdoin College with a degree of A.B., in 1874, two years after he had been ordained to the Methodist Episcopal ministry. While a student at Bowdoin he served as pastor of a church in Bath, Me. (1872-74), and from 1876-78, was pastor of a church at Portland, Me. He was called to the pastorate of a large church in Boston, in 1881 and in 1883 accepted a call to St. Paul's Methodist Church in New York City. Two years later he went to Newburgh, N. Y., but returned to New York City in 1889 as pastor of Calvary Methodist Church in Harlem, where he remained until 1893 when

he became chancellor of Syracuse University. Under his administration, which lasted until 1922, when he retired as chancellor emeritus, Syracuse University experienced a phenomenal growth. To the colleges of Liberal and Fine Arts and Medicine were added schools of Law and Applied Science as well as a Teachers' College; its endowment was increased by several millions and its wealth by more than ten millions; the campus was doubled in size; the Archbold stadium, one of the finest in the country, was built; numerous buildings were added to the university group, while the student body was increased to more than 3,000. During his pastorate of St. Paul's Church, Dr. Day made the acquaintance of John D. Archbold, vice-president of the Standard Oil Company, who was one of the church trustees, and their friendship lasted until the latter's death in 1916. When Dr. Day became Chancellor of Syracuse University, Mr. Archbold became its most generous benefactor. As the result of his writings, interviews and speeches, Dr. Day earned a nation-wide reputation as a defender of great fortunes. He was a merciless critic of President Roosevelt during the latter's fight against monopolies and during the Wilson administration and after the World War, Dr. Day was frequently the caustic critic of the President and the League of Nations. His book, 'The Raid on Prosperity' was a defence of 'big business' and attracted wide attention. It was published during the Roosevelt administration and Mr. Roosevelt once referred to Chancellor Day as "the mouthpiece of big corporations in general and the Standard Oil Company in particular." The Roosevelt-Day controversy lasted for months and was exceedingly bitter. In 1904, Chancellor Day was elected a bishop of the Methodist Episcopal Church but declined the honor. Wesleyan University and Dickinson College conferred the degree of D.D., upon him in 1883. From Bowdoin he received the degree of S.T.D., in 1894; from Northwestern University the degree of LL.D., in 1896; from Cornell College, Iowa, the degree of D.C.L., in 1904 and from Syracuse University, the degrees of L.H.D., in 1915 and LL.D., in 1921.

DAY, William Rufus, ex-associate justice of the United States Supreme Court: b. Ravenna, Ohio, 17 April 1849. He was graduated from the University of Michigan in 1870 with the degree of B.S., read law in the office of Judge Robinson of Ravenna and from 1870-71 attended law lectures at the University of Michigan. Admitted to the bar in 1872, he practiced law in Canton, Ohio, was judge of the court of common pleas, 1886-90, and in 1889 was appointed United States district judge, northern district of Ohio, but resigned before taking office, owing to impaired health. In 1897 he was appointed by President McKinley Assistant Secretary of State and soon succeeded John Sherman to the post of Secretary of State, but in a few months resigned to become chairman of the American Peace Commission to Paris at the close of the war with Spain. President Roosevelt appointed him to the Supreme Court in 1903 where he remained until October 1922, when he resigned. His attention was then concentrated upon his

duties as umpire on the American-German Claims Commission. In 1898 the degree of LL.D. was conferred upon him by the University of Michigan, and in 1899 by the College of the City of New York.

DEATH RATE. See MEDICINE AND SURGERY, ADVANCEMENT OF; VITAL STATISTICS.

DEATH ROLL. See NECROLOGY.

DEBTS, Allied, European and National. See EUROPEAN DEBTS; NATIONAL DEBTS OF THE WORLD.

DEFIANCE COLLEGE, a co-educational institution under control of the Christian Church, founded in 1902 and located at Defiance, Ohio. In 1922-23 it had a faculty of 28 members, 300 students, property valued at \$718,000 and an income of \$83,000. Albert Garfield Caris, Litt.D., is president.

DE GHERARDINE, Adelbert Biart, ("King of Bohemia"): b. in France, 1867; d. Paris, June 1922. A descendant of an old noble Breton family with a brother as admiral in the French navy and a brother-in-law a prominent broker, he, nevertheless became a conspicuous figure in vagabondia. He took up his habitation many years ago in the Quartier Latin of Paris to study and remained there the rest of his life. He styled himself "King of Bohemia" and the art student world of Paris acclaimed him as such. He became one of the most picturesque figures of Paris. He was very tall and powerfully built and was a common sight in the Latin Quarter and on the Boulevard Michel, or "Boul' Miche," dressed in a rough shooting-jacket with leggings of paper tied with string and a blanket for a cape. At night he often reposed on a bench in the streets with an empty bottle or two by his side. During the World War he gave up his idle life and worked for a bookseller in the Latin Quarter. His booklet 'Thirty Years of Bohemia' (1919), now out of print, is prized by collectors.

DE HORSEY, Sir Algernon Frederick Rous, British naval officer: b. Great Glemham, Suffolk, 25 July 1827; d. Cowes, England, 22 Oct. 1922. His family of De Horsey dates from the reign of Henry II, and he was a descendant of Sir Jerome Horsey, Queen Elizabeth's Ambassador to Russia and of Major Samuel Horsey, governor of North Carolina in 1738. Entering the navy in 1840, at the age of 13 he was present at the operations on the coast of Syria in that year. In 1853 he was promoted commander and given the *Devastation*, a steam-sloop. In 1857 he was captain and during the greater part of the 18 years he held this rank, he served on the West India station. While in command of the *Brisk* he captured, after a long chase, a celebrated Spanish slave-ship, the *Manuela* with 846 slaves aboard. He was senior officer at Jamaica in the *Wolverine* during the riots of 1865, and for his services received the thanks of both Houses of Parliament. He was also senior officer on the lakes of Canada in the *Aurora* during the Fenian disturbances of 1866-67 and wintered his ship in the ice in Quebec. In 1871 he was made aide-de-camp to Queen Victoria. In 1872 he was appointed commodore in charge of the establishment in Jamaica. In 1875 he was advanced

to flag rank and as a rear-admiral became commander-in-chief on the Pacific station, with his flag in the *Shah*, which he held until July 1879. One of his chief exploits occurred in 1875 when he engaged the *Shah* in battle with the Peruvian rebel-ship *Hunscar*. This vessel had committed outrages against British subjects and British property. In the three and a half hours' action the pirate *Hunscar* was hit 70 or 80 times, but the *Shah* did not suffer, nor did the *Amethyst*, which aided her. The engagement sounded a distinct warning to the weakness of wooden-cased ships like the *Shah* in combat with iron-clads and had its influence on naval architecture. Promoted to vice-admiral on 27 Nov. 1879, he commanded the Channel Squadron in 1884-85 and on 29 April 1885 was advanced to admiral on the active list. On 25 July 1892, Admiral de Horsey retired and on 9 Nov. 1903, he was made a knight commander of the bath. Sir Algernon, who lived for many years at Melcombe House, Cowes, resigned in 1918 the chairmanship of the Isle of Wight county magistrates at the age of 90. He had been joint deputy governor of the island since 1913 and deputy lieutenant. To the last he maintained a keen interest in all naval affairs and matters relating to county administration. He frequently contributed letters to *The Times* and was the author of 'An African Pilot' and 'The Rule of the Road at Sea.' He was the oldest admiral in the British navy. Vice-Admiral Spencer Victor Yorke de Horsey is his son.

DELAWARE, a South Atlantic State of the United States and one of the 13 original States, bounded on the north by Pennsylvania, on the west and south by Maryland and on the east by the Delaware River, Delaware Bay and the Atlantic Ocean. It has an area of 2,390 square miles and a population of 223,003, which gives it 47th place both in area and population. Of the entire population, 192,615 are whites, 30,335 negroes, 51 Asiatics and 2 Indians. According to the Federal census of 1920 the foreign-born numbered 19,810, including 2,895 Irish, 1,632 Germans, 1,497 English and 4,136 Italians. Dover is the seat of the State government and has a population of 3,720. The largest city in the State is Wilmington, which in 1920 had a population of 110,168. The third largest city is Milford, with 2,603.

Religion.—The principal denomination in the order of their numerical strength are Methodists, 37,521; Roman Catholics, 30,183; Presbyterians, 6,197; Episcopalians, 4,656; and Baptists, 3,651.

Education.—Primary education is free and compulsory and separate schools are provided for white and colored children. There are in the State 446 public schools with 961 teachers and 31,135 pupils; 26 high schools with 173 teachers and 3,045 pupils. In addition, there are two normal schools, agricultural and mechanical colleges, Delaware College and Dover College for colored students. The total expenditure of the State for purposes of education averages \$1,750,000 annually.

Agriculture.—The State is mainly agricultural, about 85 per cent of the land being in farms, of which in 1920 there were 10,140, with a total area of 944,511 acres, including 653,052 acres of improved land. In 1920, the total value

of all farm property was \$80,137,614. The chief crops are Indian corn and wheat. The State produces also much fruit and tomatoes. The State is second in tomato packing and its peach crop is famous. The chief field crops, with their acreage, yield and value, for the year 1922 were: corn, 185,000 acres, 439,000 bushels, \$3,807,000; winter wheat, 109,000 acres, 1,766,000 bushels, \$1,907,000; oats, 7,000 acres, 161,000 bushels, \$92,000; buckwheat, 4,000 acres, 76,000 bushels, \$61,000; rye, 5,000 acres, 70,000 bushels, \$74,000; tame hay, 77,000 acres, 116,000 tons, \$2,204,000; potatoes, 10,000 acres, 960,000 bushels, \$672,000; sweet potatoes, 10,000 acres, 1,720,000 bushels, \$860,000; apples, 980,000 bushels; peaches, 320,000 bushels, and pears, 158,000 bushels. On 1 Jan. 1923 there were in the State 25,000 horses, valued at \$1,950,000; 9,000 mules, valued at \$792,000; 40,000 milk cows, valued at \$2,200,000; 10,000 other cattle, valued at \$290,000; 3,000 sheep, valued at \$22,000, and 43,000 swine, valued at \$473,000.

Other Products.—The oyster and other fisheries give employment to a great number of the population. The State has large manufacturing interests, most of which are centred in Wilmington. The chief industries are the manufacture of leather, gunpowder and knitted products. The capital invested in the manufacturing industries amounts to \$73,560,900. About 25,800 persons are employed in the manufacturing industries, which used raw materials in a recent year to the value of \$38,560,718 and turned out products valued at \$59,000,000. Fruit canning and tomato packing are increasing in importance.

Communications.—The State has 335 miles of railways and 158 miles of electric railways. There is an active coastwise trade, particularly with New York and Philadelphia. Steamers ply regularly between Wilmington and New York. The Chesapeake and Delaware Canal, now being widened and deepened by the Federal government, will afford after 1926 passage for large vessels from Delaware Bay to Chesapeake Bay.

Finance.—At the beginning of the fiscal year, 1922, there was a balance on hand at the State treasury of \$1,956,031.31. Receipts during the fiscal year amounted to \$6,255,635.77 and included \$1,400,000 realized from the sale of State highway bonds. Disbursements during the fiscal year 1922, amounted to \$5,897,029.32, leaving a balance at the beginning of 1913 of \$2,314,637.76. The total bonded debt of the State at the beginning of 1923 was \$6,270,785. The total assessed value of all property was \$227,070,094.

Government.—Delaware has the honor of being the first of the 13 colonies to ratify the Constitution of the United States, that act taking place 7 Dec. 1787. The executive power is vested in a Governor, who is elected for four years. The legislative power is vested in the General Assembly, which consists of a Senate of 17 members, who are elected for four-year terms, and a House of Representatives of 35 members, who are elected for two-year terms. The State sends two senators and one representative to the Federal Congress at Washington.

Officials.—Governor, William D. Denney; Lieutenant-Governor, I. Dangforth Bush; Secretary of State, A. R. Benson; Attorney-General, S. D. Townsend, Jr.; Auditor, J. Morris Harrington; Treasurer, Thomas S. Fouracre, and

Superintendent of Education, H. V. Holloway. The Legislature meets the first Tuesday in January in odd years.

Judiciary.—Members of Supreme Court, Josiah O. Wolcott, chancellor; James Pennewill, chief justice; associate judges, Herbert L. Rice, Charles S. Richards, W. W. Harrington and Richard S. Rodney.

DELAWARE RIVER BRIDGE. See BRIDGES.

DELAWARE, University of, a State co-educational institution (men and women separate), founded in 1833 and located at Newark, Del. In 1922-23 it had a faculty of 62 members, 509 students, property valued at \$1,874,449.34 and an income of \$526,526.68. Walter Hulihan, Ph.D., D.C.L., is president.

DELCASSÉ, Théophile, French statesman: b. Pamiers, Ariège, France, 1 March 1852; d. suddenly in the gardens of the Bishop's Palace, Paris, 21 Feb. 1923. His parents were peasants, living among the foothills of the Pyrenées, but they had the means to send their son to the Sorbonne, where he graduated as licentiate of letters, wrote a four-act heroic drama and an epic poem. He was acting foreign editor in Gambetta's "La Republique Francaise" and entered the Chamber of Deputies in 1889, representing the district of Foix. On the naval, foreign relations and colonial committees, he was industrious, securing the establishment of a Colonial Ministry with himself as Under-Secretary (1893) in the Ribot Government. In the Dupuy Government, he was (1894) Colonial Minister. With immense zeal, he mastered the Colonial problems of France. In 1898, he became Foreign Minister in the Brisson Cabinet, which portfolio he held until 1905. Just as Kitchener reached Khartoum and avenged what England considered to be the disgrace of Gordon's death, Major Marchand arrived at Fashoda. Unless there was to be a crisis, the Major must needs withdraw, which he did, Delcassé seeing in the affair an opening for the entente with England. Throughout the world, Anglo-French differences were cleared up,—for instance, the dispute over the Newfoundland Fisheries—and in 1904, the Entente was arranged by which Britain was to have a free hand in Egypt and France, a free hand in Morocco, which, of course, adjoined her dependencies of Tunis and Algiers. In 1902, King Victor Emmanuel visited France, which visit was returned in 1904 by President Loubet, with Delcassé. Italy agreed not to support German aggression on France and this undertaking enabled France, 10 years later, to leave her Italian frontier unprotected. The tariff war between France and Italy ceased. In 1905, it was clear that France, despite the Treaty of Madrid, intended to absorb Morocco. The German Emperor therefore visited Tangier and delivered a hostile speech. Warnings were also sent to Paris and London. France was unprepared for war and the Rouvier Government allowed Delcassé to resign. The German Chancellor, von Bulow, was made a Prince and the Conference of Algeciras followed. Naturally, Delcassé endeavored to promote good relations between Britain and Russia.

In 1911 he was Minister of Marine and in August, 1914, Delcassé returned to the French

Foreign Office. But, in 1915, he resigned owing to criticism of his alleged failure to retain the friendship of Bulgaria. When he died, it is understood that he was again working unofficially for a renewal of the entente with Britain, to which object he was ready to sacrifice some, at any rate, of France's claim to reparations.

DELITZSCH, Friedrich, German Assyriologist: b. Erlangen, Bavaria, 5 Sept. 1850; d. Langenschwalbach, Hesse-Nassau, 23 Dec. 1922. He was the son of Franz Delitzsch (1813-90), Hebraist and theologian. He was educated in Leipzig and became a professor in Leipzig in 1877; in Breslau in 1893 and was made professor of Assyriology in the University of Berlin in 1899. His lectures attained a wide popularity, and one of them delivered in 1901 and entitled 'Der babylonische Ursprung hebräischer Ideen,' was attended by Emperor Wilhelm II, who gave a large sum toward researches to be made in the territory of ancient Babylonia. This lecture produced a storm of criticism from the German Evangelicals. In 1906 he lectured in London and the United States on Nineveh and Babylon and kindred subjects. His book, 'Wo lag das Paradies?' (Where is Paradise?), in which he located the Garden of Eden in Mesopotamia, created a sensation. His other works include: 'Assyrian Studies' (1874); 'Prolegomena of a New Hebrew and Aramaic Vocabulary to the Old Testament' (1886); 'Assyrian Vocabulary' (1887 onward); 'Assyrian Grammar' (1889); 'Assyrisches Handwörterbuch' (1894-96); 'Das Babylonische Welt schöpfungsccepus' (1896); 'Babel und Bibel' (1902; Eng. trans., 1903); 'Asurbanipal und die assyrische Kultur seiner Zeit' (1909); 'Handel und Wandel in Altbabylonien' (1910); 'Kleine sumerische Sprachlehre' (1914); 'Sumerisches Glossar' (1914); a translation of George Smith's 'Chaldean Account of Genesis'; and numerous articles in 'Mitteilungen der Deutschen Orient-Gesellschaft' (1899-1913). He was also director of the Western Asiatic section of the Berlin Museum.

DENBY, Edwin, Secretary United States Navy: b. Evansville, Ind., 18 Feb. 1870. He was educated in the public schools at Evansville. In 1885 he accompanied his father, the Hon. Charles D. Denby, to China, to which country the senior Denby was the accredited Minister of the United States. Returning to the United States in 1894, Mr. Denby took up the study of law at the University of Michigan, from which he was graduated with the degree of LL.B., in 1896. He was admitted to the bar the same year and began practice at Detroit. When the Spanish-American war broke out in 1898, Mr. Denby joined the Navy and served as gunner's mate, third class, on the U. S. S. *Yosemite*. In 1903 he entered politics and was elected a member of the Michigan House of Representatives. Two years later he was elected a member of the National House of Representatives and served in Congress during the 59th-60th and 61st Congresses (1905-11). He served as a member of the Detroit Charter Commission in 1913. When America entered the World War, Mr. Denby in April 1917, enlisted as a private in the United States Marine Corps and served at the Marine Corps

training camp, Paris Island, S. C., and for a few weeks in France as an observer. On 31 Dec. 1920 he was placed on the inactive list as a major of the Marine Corps Reserve. In December 1920, he was appointed chief probation officer of the Recorder's court of the City of Detroit and of the Circuit Court of Wayne county, which position he held until he resigned in 1921 to become Secretary of the Navy in President Harding's Cabinet. In his annual report of the fiscal year 1921-22, Mr. Denby asserted that the Navy administration was entirely in sympathy with the purpose of the Washington Conference which met on 12 Nov. 1921 and which placed a limitation on naval armaments. Under Mr. Denby's administration there has been adopted a general naval policy which is, to quote his own words "To create, maintain and operate a navy second to none and in conformity with the ratios for capital ships established by the treaty for limitation of naval armaments." This policy he asserts should hold until such time as other powers by their departure from the idea of suspended competition in naval arms indicate other procedure. In 1922 Secretary Denby attended the reunion of the Naval Academy class of 1881 which was held at Tokio, Japan on 4 July. While in the Far East, he also visited Nagasaki, Peking, Shanghai, Manila and other places. For details concerning the reorganization of the Navy under Secretary Denby, see article UNITED STATES NAVY.

DENMARK, a kingdom of northwest Europe occupying the peninsula of Jutland and the islands to the east thereof. It has an area exclusive of Greenland (q.v.) of 16,600 square miles and a population of 3,267,831 in 1921. The capital is Copenhagen which has a population of 561,344. Other cities are Aarhus (74,256); Odensee (49,469); Aalborg (71,613); and Horsens (27,588). The population of the chief divisions, including the Faro Islands was in 1921:

Baltic Islands.....	1,208,008
Jutland.....	1,498,479
Faro Islands.....	21,364
Copenhagen.....	561,344

Religion.—The religious census reports 2,800,000 Protestants mostly Lutherans, 10,000 Roman Catholics and 6,000 Jews. The national Lutheran Church is governed by seven bishops. There is full and complete toleration of all denominations.

Education.—Primary education has been compulsory in Denmark since 1814. There are 4,232 schools of, primary grade with 473,000 pupils. In 1921 there were 230 technical schools with 23,000 students, 21 normal schools with 1,500 students, 81 commercial schools with 14,000 students, 78 high schools with 9,400 students, a college of pharmacy, dental college and a polytechnic institute, the last named having 1,400 students. There is a university at Copenhagen with over 100 faculty members and a student body of over 3,000.

Agriculture.—Denmark is a land of small farmers; about 80 per cent of the soil is productive and about 40 per cent of the whole is arable. In 1921 the crop acreage and production were as follows: Oats, 1,111,579 acres

(693,000 tons); barley, 628,148 acres (562,000 tons); rye, 558,795 acres (288,000 tons); wheat, 219,652 acres (278,000 tons); potatoes, 207,925 acres (1,360,000 tons). The last live stock census (July 1921) showed 2,590,903 cattle, 1,429,908 swine, 597,988 horses, 521,932 sheep and 17,803,000 hens in the kingdom. Under the law small farms may not be joined to large estates and the latter may be divided up. Tenants have full control of the land so long as the rents are paid.

Manufactures.—The industrial establishments in the kingdom number about 81,000 and furnish employment to 350,000 people. Brandy is produced by 12 distilleries in the capital to the amount of 3,500,000 litres yearly. Sugar from beets was produced to the amount of 152,740 tons in nine factories in 1920. The brewing of beer is also an important industry, the yearly output being about 3,000,000 litres, of which one-third is of the variety known as small beer.

Fisheries.—The fisheries are of the greatest importance, the value of the catch in 1920 being \$12,000,000. The fishing fleet comprises over 15,000 boats.

Commerce.—The Danish balance of trade for 1922 was even more unfavorable than in 1921, imports increasing and exports decreasing, when compared with the year before. Although the quantity of goods exported in 1922 in many instances increased over 1921, the total value of 1922 exports fell below the value of 1921 exports by 210,000,000 crowns, owing mainly to low export prices. The total value of imports for 1922 was 1,448,000,000 crowns, and of exports 1,173,000,000 crowns, thus creating an import surplus of 275,000,000 crowns. In 1921 the import surplus was only 161,000,000 crowns when the total imports aggregated 1,544,000,000 crowns and exports 1,383,000,000 crowns. The largest single item on the import list was fuel. The value of this product, although considerably larger in amount than in 1921, only reached 125,000,000 crowns, as compared with 146,000,000 crowns for the year before.

Coal and fuel were imported in the following amounts: Anthracite and briquettes, 2,839,000 tons; coke and cinders, 794,000 tons; illuminating paraffin, 76,000 tons; petrol, 52,000 tons; other non-dutiable fuel oil, 75,000 tons.

Practically all of the coal imported in 1922 came from Great Britain, Germany supplying only about 12,600 tons of anthracite, and the United States, 121 tons. Other important imports were unground grain and pod grain and fodder, comprising nearly half the total imports except fuel, groceries, drygoods, lumber, and raw iron. The chief exports were live stock, meat, butter, milk, cheese, and eggs. Butter, cheese, and milk exported were valued at 458,000,000 kroner.

Communications.—Denmark possesses a merchant fleet of 1,931 vessels of an aggregate tonnage of 1,041,048, of which 609 of 763,621 tons are steamers and 714 of 178,926 tons are motor ships. The railways have a total mileage of 2,662, of which 1,283 are the property of the state. There are 4,713 miles of improved roads and 23,000 miles of lesser roadways. There are 1,362 post-offices, 259 telegraph offices and 2,258 miles of telegraph line, 552,000 miles

of telephone wires. The State Telegraph's earnings for the fiscal year ended 31 March 1922, amounted to 14,654,000 crowns and the expenditures to 15,393,000 crowns. The deficit for that year was 739,000 crowns, as compared with over 4,000,000 crowns during the preceding year.

Finance.—The budget for the fiscal year 1922-23 estimated the revenues at \$85,485,995 and the expenditures at \$102,524,990. The largest item of expenses was the 69,000,000 kroner for education followed by 47,000,000 kroner for interest and expenses on the public debt. The budget for the financial year 1923-24 estimated expenditures of 405,000,000 crowns and revenues of 407,000,000 crowns. The expenditure side shows reductions in the estimates of yields from direct taxes and the expected surplus from state owned enterprises. No new taxation measures are attached. The completed state accounts for the last fiscal year show a deficit of 57,000,000 crowns. The surplus of the state railway for August amounted to 3,000,000 crowns; receipts from the restaurant turn-over tax during August totaled 1,683,000 crowns; and customs duties and excise revenues brought in 77,600,000 crowns for the first six months of the current fiscal year. The note circulation of the National Bank, which increased by 50,000,000 crowns during the reconstruction of the Landmansbank, dropped on 7 October to 447,000,000 crowns as compared with a circulation of 414,000,000 crowns on 9 September. The government maintains a reserve fund of \$2,500,000 for use in case of unforeseen emergencies. The public debt of the kingdom in 1921 was \$230,000,000 incurred from former deficits and from the construction of harbors, railways, lighthouses and other aids to navigation.

Army.—The peace strength of the active army is 60,000 men of all arms with 55,000 additional available on mobilization. The military budget for 1922 was \$10,000,000.

Navy.—The fleet is maintained solely for purposes of coast defence. It comprises five monitors, two old cruisers, five mine layers, 20 first-class torpedo boats and 14 submarines.

Colonies.—Greenland is the only colony of Denmark. It has an area of 46,740 square miles and a population of 14,000. The largest settlement is Sydproven with a population of 800. The trade of the colony is a state monopoly.

Government.—According to the present constitution the legislative power is vested jointly in the King and the Diet. The executive power is vested in the King who exercises it through his Ministers. The Diet, or Rigsdag, is composed of two chambers—the Landsting or Senate and the Folketing or Commons. The Folketing has 149 members elected by proportional representation from their districts. The remaining seats are granted to the minority parties. The term of the legislature is four years. The Senate or Landsting has 56 members elected for eight years by restricted suffrage. The Rigsdag meets every year on the first Tuesday in October. The State Council, which under the King exercises the executive power is made up of ten departments. The

President of the Council in 1922 was Mr. Neergaard.

For purposes of administration the kingdom is divided into 22 counties at the head of each of which is a governor. In each county is a council which supervises the municipalities, of which there are 88 with a mayor and urban council. Copenhagen has its own form of administration and forms a district by itself. The King in 1922 was Christian X, born 1870, who succeeded to the throne on the death of his father, Frederick VIII, on 14 May 1912.

History.—The beginning of the year found the Danish government negotiating a commercial treaty with Soviet Russia; the negotiations were broken off, however, after it was found impossible to come to a separate trade agreement. The greatest Danish advocate of world peace, Frederik Bajer, was mourned by the nation at his passing on 25 January. On 15 February the Danish Employers' Association declared a general lockout which precipitated the greatest labor struggle in the history of the country. The trouble began by the efforts of the employers to bring about a 20 per cent cut in wages. Negotiations were protracted for several weeks and there were 100,000 men out of employment. Railroads, street railways, shipping, telegraphs, telephones, gas, water and electric plants and bakeries were not included in the lockout. The general lockout came to an end on 7 April, and the 150,000 men then affected by it returned to work on the 10th. It was ended by a compromise although it involved acceptance by the men of the conditions laid down by the employers at the beginning of the trouble. On 5 March the court announced the betrothal of the Crown Prince Christian Frederick to the Princess Olga, the eldest daughter of Prince Nicholas of Greece, a brother of ex-King Constantine.

It became known on 16 March that Henry Ford, the American automobile manufacturer, had obtained sites in Copenhagen for the establishment of a great automobile plant.

There were manifestations of uneasiness at the aggressive tactics practised in the German part of Schleswig against those persons who favored incorporation with the kingdom of Denmark. The Danish press gave numerous instances of persecution said to be going on there against those who are in sympathy with Denmark.

In May the government introduced a measure in the Parliament for the reduction in the annual contingent of the army from 11,500 to 6,700 men. It provided also for shorter periods of training both in the infantry and cavalry arms and for the demolition of eight seacoast fortresses. By this means it is hoped to reduce the cost of the military establishment from 65,000,000 to 43,000,000 kroner annually. The main features of the old compulsory military service law are retained. The Danish-German treaty establishing the frontier line across Schleswig was ratified by Denmark in the middle of May. All parties in both houses of the legislature acquiesced in the settlement. The Danish Joint Committee for Help to War Devastated Countries reported that several thousand Austrian children had been entertained in 1921.

Relief measures were also taken in the Rheims district and in Germany. On 21 June the Italian King and Queen visited the Danish court and on the day following assisted at the ceremony of laying the foundation stone commemorating the sixth centenary of the death of Dante. The Kasmussen Arctic Expedition reported successes in botanical researches about the middle of June. The Ministry of Public Works secured an appropriation of 700,000 kroner for the deepening of the Drogden waterway. This waterway lies south of the capital between the islands of Amager and Saltholm. Its natural depth is but 22 feet and the plan referred to above contemplates deepening it to 25 feet with a minimum bottom width of 825 feet. This will enable large vessels to pass through from the Atlantic to the Baltic Sea, which now go either through the Kiel Canal or detour through the Great Belt. The deepening of this waterway will greatly lessen the importance of the famous Kiel Canal. The economic situation continued to improve throughout the summer and autumn months. The reduction of 15 per cent in the wages of factory operatives enabled Danish manufacturers to renew competition with Germany and in August it was reported that the unemployed numbered only 39,000. The government inaugurated several economies in the public services and for the first time in April 1922 the state railways showed a surplus amounting to 4,500,000 kroner. The Landsmandsbank of Copenhagen was in serious difficulty more than once during the year, 81,750,000 kroner being written off its reserve to meet losses incurred in the economic crisis of 1921. The National Bank of Denmark came to its aid by putting up a fresh reserve capital at its disposal and leaving it with a total capital of 135,000,000 kroner on 11 July. The Conference of the World's Alliance for International Goodwill Through the Churches met in Copenhagen in August. There were 90 official delegates, representing 24 nations and 60 denominations in Europe present. The chief item on the program was the question of the rights of religious minorities in central and eastern Europe. The question of general disarmament also was placed on the agenda and during the discussion it was brought out that there were 1,000,000 more men under arms in 1922 than in 1914. In August two Danish biological expeditions reported remarkable achievements in the study of deep-sea fauna. One expedition was to the Bermudas where it located the breeding places of the common and American eels. The other expedition was to the Kei Islands in the Malay archipelago where new species of marine animals were discovered in such profusion that the Danish government decided to establish a marine biological station on the Kei Islands. On 21 September the Rigsdag passed the bill for the rehabilitation of the Landsmandsbank. The bank's preferred shares were reduced from 100,000,000 kroner to 70,000,000 kroner and the 30,000,000 kroner of the National Bank was constituted a reserve fund. The Minister of Commerce appointed a committee to act under the appropriation of 5,000,000 kroner for the promotion of the country's export trade. In September the annulment of the engagement of

Crown Prince Frederick and Princess Olga, niece of ex-King Constantine of Greece, was announced. In October the Neergaard ministry was reorganized. The cause of the cabinet crisis was the regulation of imports to protect Danish industries and the refinancing of the Landmandsbank. In November in the closing days of the session the Rigsdag passed the law called "The State Taxation on Real Estate," which for the first time in the history of the country enacts the principle of the single tax and the taxation of unearned increments. A land assessment is also to be levied on real property and the valuation of the land without buildings is estimated for this purpose. On this land assessment a state tax is levied.

DENVER, University of, a Methodist co-educational institution, founded March 1864 and September 1880, and located at Denver, Colo. In 1922-23 it had a faculty of 100 members, 3,500 students, and property valued at \$1,500,000. Income figures not given. Heber R. Harper is president.

DENZA, Luigi, Italian musician: b. Castelmare di Stablia, 24 Feb. 1846; d. London, 23 Jan. 1922. His family had been musicians for many generations. His greatest fame was attained by his song, 'Funiculi-Funicula,' written in 1880 at the time of the opening of the funicular railway up Vesuvius. Richard Strauss introduced it into his 'Italian Suite.'

DE PAUW UNIVERSITY, a co-educational institution, non-sectarian but under the auspices of the Methodist-Episcopal Church, founded in 1837 and located at Greencastle, Ind. In 1922-23 it had a faculty of 67 members, 1,187 students, property valued at \$1,141,854 and an income of \$290,598.92. George Richmond Grose, LL.D., D.D., is president.

DESCHANEL, Paul Eugène Louis, French statesman, 10th president of the republic, and author: b. Brussels, Belgium, 1856; d. Paris, France, 28 April 1922. At the time of his birth his father was a political exile from France. He was educated at the College Saint Barbe and the Lycée Condorcet, receiving his degrees in arts and law. In 1878 he was made sub-prefect of Druex and in the following year became successively Secretary-general of the department of Seine-et-Marne and sub-prefect of Brest. In 1881 he was sub-prefect of Meaux. In 1885 he was elected to the Chamber of Deputies from Eure-et-Loir. Owing to his remarkable qualities he quickly carved out for himself a prominent position in the lower chamber, and in 1896 was chosen vice-president thereof. During the troublous times of the Dreyfus affair, Deschanel successfully stood for the presidency of the chamber against Brisson in 1898 and held the office until 1902. It was during these four years that he gained lasting popularity both in the political world and with the general public, the latter being more especially attracted, perhaps, by his exterior qualities, his charm of manner, and elegant appearance. From 1905-12 he was president of the commission on exterior and colonial affairs, being director of the budget of the ministry of foreign affairs after 1906. In 1912 he was again elected president of the Chamber of Deputies and

this time held the office until January 1920 when he was elected President of the Republic to succeed Raymond Poincaré in a bitter contest with Georges Clemenceau who had been Premier of France during the later years of the World War and one of the negotiators of the Treaty of Versailles. Until a few days before the election it was believed in France and abroad that he was the only candidate who had a chance for the office. The combination of the Catholic and Socialist blocs in the French parliament with the enemies of Clemenceau elected Deschanel by the largest majority received by a candidate since the election of Thiers, the first president. He took office 18 Feb. 1920. On 24 May following, when on his way at night from Paris to Montbrison, he fell from a moving train while attempting to raise a window in his sleeping compartment. At first it was supposed that he had been but slightly injured. However, his health was never fully restored, and in September 1920 he resigned the presidency. After resting for a period he took his place in the Senate, but his work was done. He was a member of the French Academy and the Academy of Moral and Political Sciences. He published 'The Tonkin Question' (1883); 'French Politics and Oceania' (1884); 'French Interests in the Pacific Ocean' (1885); 'Orators and Statesmen' (1888); 'Feminine Notables' (1889); 'Literary Notables' (1890); 'Questions of the Day' (1891); 'Decentralization' (1895); 'The Social Question' (1898); 'The New Republic' (1898); 'Four Years as President of the Chamber' (1902); 'L'Idée de Patrie' (1905); 'Domestic and Foreign Politics' (1906); 'At the Institute' (1907); 'The Organization of Democracy' (1910); 'Beyond the Frontier' (1910); 'French Words' (1910); 'Segrais, Madame de Sévigné' (1911); 'Lamartine' (1913); 'Gambetta' (1920).

DES MOINES UNIVERSITY, a non-sectarian co-educational institution, supported by the Baptist denomination, founded in 1852 and located at Des Moines, Iowa. In 1922-23 it had a faculty of 49 members, 1,488 students, property valued at \$500,000, and an income of \$278,543. John W. Million, LL.D., is president.

DETROIT, University of, a Roman Catholic co-educational institution, controlled by the Jesuits, founded 1877, incorporated 1881 and located at Detroit, Mich. In 1922-23 it had a teaching staff of 190; 1,525 students, property (real estate and buildings) valued at \$2,147,000 and an income of \$126,000. President, Rev. John P. McNichols, S.J.

DE VALERA, Eamonn, Irish Republican leader: b. New York, N. Y., 14 Oct. 1882. His father is said to have been a Spaniard named Vivian de Valera; his mother, Catherine Coll, was a native of Bruree, County Limerick, Ireland. In his childhood he was taken to his mother's people, receiving his primary education in the national schools and later proceeding to the Christian Brothers' School, Charleville, County Cork. He next attended Blackrock College, County Dublin, where he was awarded an exhibition in 1899 and again in 1900. In 1901 he entered the Royal University and was graduated in 1904 with the degree of B.A. Specializ-

ing in mathematics and science he proceeded to the degree Sc.B. in 1914. Meanwhile De Valera became professor at Rockwell College. Returning to Dublin he taught in several colleges and in 1912 became examiner in mathematics to the Irish Intermediate Board of Education. De Valera took part in the organization of the Irish Volunteers in 1913 and was at the same time a member of the Sinn Féin. He assumed no role of leader until the Easter Rising of 1916 when he commanded the insurgents holding Boland's Bakery near Ballsbridge. De Valera was able to hold his position during the entire week of fighting and surrendered on 30 April on order from President Padraic Pearse. De Valera was sentenced to death but the sentence was commuted and he remained in prison until the general amnesty of 15 June 1917. As the only surviving leader of the rebellion the extremists of the Sinn Féin party turned to De Valera for leadership and the same year he was elected to Parliament from East Clare. His victory at the polls gave a great impetus to the Sinn Féin, which in convention on 26 Oct. 1917 elected him President of the "Republic." De Valera took a prominent part in opposing the extension of conscription to Ireland. He was arrested in May 1918 and imprisoned at Lincoln, England. He managed to escape on 3 Feb. 1919 and reached the United States. There he tried to make the independence of Ireland a party issue in the Presidential election of 1920. The election of Harding made it clear that he had failed in this part of his mission and in 1921 he returned to Ireland. He conducted negotiations with the British Government in the autumn of 1921 with a view to a settlement of the Irish question. He ably managed the preliminaries to the conference of Irish and British delegates which resulted in the Treaty of 6 Dec. 1921. De Valera, however, refused to assent to the Treaty and he soon found himself superseded by Arthur Griffith and Michael Collins, who proceeded to set up an Irish Government under the Treaty with Britain. De Valera led the opposition party which caused great destruction and loss of life in Ireland throughout 1922. In 1923 it became evident that De Valera no longer spoke even for the extremists or Republicans. His influence had waned.

DE WET, Christian Rudolf, Boer general: b. Leeuwkop, Smithfield district, Orange Free State (now Orange Free State Province of the Union of South Africa), 7 Oct. 1854; d. De Wetsdorp, South Africa, 3 Feb. 1922. He was a son of Jacobus De Wet of De Wetsdorp and in 1873 married Cornelia Margaretta Kruger of Bloemfontein by whom he had 10 children. He served in the first Anglo-Boer War, 1880-81, as a field cornet of the Heidelberg district, and, in 1885, represented Lydenburg in the Transvaal Volksraad. From 1885-97 he was a member of the Orange Free State Volksraad. De Wet served with distinction throughout the Boer War from 1899-1902, attaining the rank of general and commander-in-chief of the Free State forces. Some days before the ultimatum of President Kruger to Great Britain, De Wet was called out under the commando law of the Free State. At that time he was merely a private burgher. When the commandos met, it was the

duty of the commandants to elect a commander-in-chief, but De Wet was not considered. Prinsloo was elected and De Wet was placed under Steenekamp who sent him off with a small detachment of burghers to the Natal frontier. Upon his return he found that he had been elected vice-commander under Steenekamp. All of this happened prior to 11 Oct. 1899, the date upon which the time allowance for England to accept the Boer ultimatum expired. Prinsloo, in the meantime, had issued orders to the Free Staters to occupy the passes into Natal. Hostilities began immediately upon England's refusal to accede to the Boer demand. On 30 Nov. Steenekamp and De Wet drove the British from Swarthooskop. They had under them but 360 men. Their losses totaled four killed and five wounded, whereas the British lost 203 killed and wounded, 817 taken prisoners, 2 Maxims, 2 mountain guns, 1,000 Lee Metford rifles, besides cartridges, mules, and horses. As a result of this success, De Wet was promoted by President Steyn from vice-commandant to vecht-general, or "fighting general." He was assigned to duty in the west of the Free State and, therefore, had no part in the Colenso victory. Cronje was now his superior officer and from the beginning their relations were strained. Early in 1900 President Steyn appointed Philip Rudolf Botha, vice-vecht-general to De Wet. Philip Botha was an elder brother of Gen. Louis Botha and between him and De Wet there sprang up a remarkable comradeship in arms which did not end until toward the close of the war when Philip Botha was killed. De Wet and Philip Botha were charged with the relief of Cronje but the task was beyond their power. De Wet, however, became vice commander-in-chief and thereafter attended the war council. Thereafter followed his surprise of the British at Sanna's Post, an exploit that was highly praised by the military experts; the victory of Reddersburg, and the defeat by his commandos under Philip Botha of Lord Roberts' advanced columns at Tabaksberg. In November 1900, De Wet and Philip Botha again joined forces and executed the brilliant capture of De Wetsdorp. By the end of the year De Wet had reorganized his Free State forces under two assistant commanders-in-chief, Philip Botha and Peter Fourie, and shortly thereafter began his invasion of Cape Colony and that series of exploits which won him fame. He took an active part in the peace negotiations of 1902. By that time he had become vice-president of the Free State and in this capacity signed the Treaty of Vereeniging. With the other Boer generals, he visited England after the conclusion of the war and endeavored, unsuccessfully, to secure a modification of the peace terms. In November 1902, he published his 'Three Years of War,' being an account of the various campaigns in which he participated. In 1907 he became a member of the first parliament of the Orange River colony and served as Minister of Agriculture therefor, 1907-15. Following the outbreak of the World War in 1914, De Wet, taking advantage of the opportunity that great cataclysm afforded, instigated a rebellion against British rule, alleging as a reason that the liberal attitude of the Union government toward the natives was unreasonable. The insurrection, however, was promptly quelled, in

part at least by the activities of Manie Botha, a son of Philip Botha, De Wet's old comrade in arms. Young Botha organized the government forces and held them until his uncle, Gen. Louis Botha, then Prime Minister, came up and defeated De Wet at Mushroom Valley. His command, numbering about 3,500 men, went to pieces, and he was taken prisoner. He was tried, condemned to six years imprisonment, and fined £2,000, but a year later, in December 1915, he was released after giving a written promise that he would take no further part in politics.

DEY, Frederic Van Rensselaer, American writer of detective stories: b. 1861; d. New York City, 25 April 1922. Originally selecting a legal career, Mr. Dey abandoned his practice in 1887, and thereafter devoted his energies to the writing of detective stories. He won fame as the author of the 'Nick Carter Series,' which made its first appearance from the presses of Street and Smith in 1890. The first story was entitled 'Nick Carter, Detective,' by 'A Celebrated Author.' The series later became *The Nick Carter Weekly*, by 'Nick Carter.' Mr. Dey was a prolific writer; from 1890 onward he is said to have written 1,076 Nick Carter stories, comprising in all about 40,000,000 words; the average number of words in each story being about 25,000. Among those whom he consulted for data and atmosphere for these stories were Inspector Joseph Faurot of the New York police department. The latter was an old friend, and gave him out of his police experience the ideas for many of the adventures of Nick Carter, which thrilled two generations of readers. Before Faurot's time Mr. Dey was accustomed to get material from the late Inspector Thomas Byrnes, and Inspector Aleck Williams. Unlike other writers of fiction, Dey never attempted to apply his theories to the solution of real mysteries. For the two years preceding his death, Mr. Dey had not written anything. Nick Carter had passed out of fashion but under pseudonym of 'Varick Vanardy' his creator had created a new fictitious detective named Crewe, familiar to all who read detective stories. Reduced to rather straightened circumstances, Mr. Dey went to a New York hotel and after writing farewell messages to several friends, committed suicide.

DIABETES. See MEDICINE AND SURGERY, ADVANCEMENT OF.

DICEY, Albert Venn, English barrister and university professor: b. 1835; d. Oxford, England, 7 April 1922. He was educated at Balliol College, Oxford, and became a barrister of the Inner Temple in 1863. From 1882 until 1909 he was Vinerian professor of English law at Oxford University and was regarded as one of the greatest authorities of his day upon the British constitution. He was appointed a Queen's Counselor in 1890. He published 'The Privy Council' (Arnold Essay, 1860); 'Treatise on Rules for Selection of Parties' (1870); 'The Law of Domicil' (1879); 'Law of the Constitution' (1885); 'England's Case Against Home Rule' (1886); 'Treatise on the Conflict of Laws' (1896); 'Lectures on the Relation between Law and Public Opinion in England during the 19th Century' (1905); 'Thoughts on the Union between England and Scotland' (with Prof. Robert Sangster Rait, 1920).

DICKINSON COLLEGE, a co-educational institution under Methodist auspices, founded in 1783 and located at Carlisle, Pa. In 1922-23 it had a faculty of 28 members and 507 students. Figures are not available as to its property valuation or its income. James H. Morgan, LL.D., is president.

DIESEL ENGINE. During and since the World War the adoption of the Diesel engine has been very remarkable. While Germany, according to the peace treaty, is no longer allowed to build Diesel engines, other nations especially England, use this engine for various purposes, for example in the operation of electric power plants, airships and especially sea-going ships. While some years ago England substituted coal-fired steam boilers on her ships with oil burning steam boilers, to-day the latter are being substituted with Diesel engines, to the elimination altogether of steam boilers. The limited size or capacity in which Diesel engines can be built economically, prevents this engine from being adopted for large size war ships, therefore its use is confined to auxiliary war ships and the merchant marine.

Dr. Rudolph Diesel, the inventor, after four years' experimental work, built in 1897 the first commercially successful engine in the Augsburg works (Germany), and demonstrated that it had a higher heat efficiency than any other known heat engine.

The Diesel engine is an internal combustion engine which utilizes, directly in the cylinder, any heavy liquid fuel, ranging from kerosene to coal tar. It requires neither carburetors nor ignition system. Pure air, with which the cylinder is filled, is compressed by the upward-traveling piston to a pressure of 450 to 500 pounds. Its temperature increases, due to the compression, to approximately 1,000 degrees Fahrenheit. At or near the upper dead-center of the piston the fuel is sprayed into the cylinder, gradually and in a finely nebulized condition. The fuel is gasified and ignited by the heat of the compressed air, without any supplementary means; it burns during the first part of the piston down-stroke, after which the hot gases in the cylinder continue to expand and perform work on the piston, until they are exhausted from the cylinder.

Diesel engines are built to operate on either the two-stroke cycle or the four-stroke cycle system. In the former, two strokes of the piston, or one revolution of the crankshaft, are required to complete the cycle of operation. In the latter (four cycle) four strokes of the piston, or two revolutions of the crankshaft, are required to complete the cycle of operations.

There are no other known methods of generating power from fuel which can approach this engine in efficiency. By efficiency as here used is meant the proportion of the energy contained in the fuel which is transferred into useful energy. It is most readily compared on the basis of heat units (British Thermal Units or B. T. U.). Bituminous coal, as ordinarily used for firing under steam boilers, contains 10,500 to 14,500 B. T. U. per pound of coal. The average is somewhat below 12,000. Fuel oil, as used for firing under steam boilers and for combustion in Diesel engines, contains 18,000

to 19,500 B. T. U. per pound. The average is about 18,800 B. T. U. per pound or 143,000 per gallon.

To compare the efficiencies of the various prime movers, cognizance must be taken of the average power developed, and the normal operating conditions. Steam plants are subject to losses in the boilers, due to radiation and leakage; also steam consumption by auxiliary apparatus, such as boiler feed pumps and condenser pumps. Added to this, most steam plants must keep up steam during periods when the prime movers are not running; and during portions of the running periods maintain steam in excess of the immediate requirements. These "stand-by" fuel consumption will vary from zero in an ideal plant operating continuously at a constant load, to 25 to 30 per cent of the useful consumption in a plant operating intermittently or with variable load. For example, at a constant load of 50 per cent of its rated capacity, an 800 indicated horse-power compound condensing Corliss engine plant consumes 29,000 B. T. U. per break horse-power hour, which is equivalent to 2.32 pounds of coal, or 0.203 gallons of fuel oil; while the Diesel engine consumes 9,800 B. T. U., equivalent to 0.069 gallons of fuel oil. The steam plant will, in addition, consume at least 10 per cent for "stand-by"; whereas the Diesel engine plant has no stand-by consumption. The actual comparison would thus be 0.223 to 0.069 gallons, or about three and one-quarter to one in favor of the Diesel engine plant.

FRANK KOESTER,
Consulting Engineer.

DIRIGIBLES. See AERONAUTICS.

DISARMAMENT CONFERENCE. See WASHINGTON CONFERENCE.

DISASTERS. The greatest disaster of 1922 was the typhoon at Swatow, China, on 2 August which took a toll of 50,000 lives. On 28 January, 98 persons were killed when the roof of the Knickerbocker Motion Picture Theatre in Washington, D. C. collapsed. The sinking of the British steamer *Egypt*, off Ushant on 20 May, resulted in the loss of 87 lives. According to a report issued at the time, practically the entire crew of 300 was lost when the Japanese cruiser *Nitaka* went down in a typhoon off the Kamchatka coast, 26 August. A report from Santiago, Chile, stated that 316 persons perished when the Chilean steamship *Itata* sank on 29 August near Coquimbo. Thirty-nine persons were killed in an explosion in the White Haven Colliery in Great Britain on 5 September. Between 50 and 60 lives were lost in the sinking of the German liner *Hammonia* off the Portuguese coast on 9 September. Forty-seven lives were lost in the Argonaut mine disaster in California in the early part of September. On 28 September, the Italian fort at Spezia, on the Gulf of Genoa, was struck by lightning and exploded, killing 174 persons and injuring approximately 1,000. Fifteen persons lost their lives in a fire at 110th Street and Lexington Avenue, New York City, on 22 October. Earlier in the same month, between 30 and 40 persons were reported to have perished in a great fire which swept over northern Ontario,

Canada. On 5 November it was reported that 135 Russian refugees from Vladivostok were drowned when two steamers foundered. Seventy-seven miners lost their lives as the result of a gas explosion in the Reilly coal mine at Spangler, Pa., on 6 November. It was estimated that, at least, 1,000 persons lost their lives as a result of the Chilean earthquake of 9 November and the tidal wave which followed. Over 90 persons were reported to have been lost when the steamer *Topolobampo* capsized 19 November at Port La Bomba on the Gulf of California. A dust explosion in Number 3 mine of the Woodward Iron Company at Dolomite, Ala., on 22 November, caused the death of 84 persons. On 27 November, 34 persons lost their lives in a collision between a launch and a ferry boat in the Parana River, near Zarate northwest of Buenos Aires. See also ACCIDENTS; MINES, BUREAU OF; FIRE LOSSES.

DISCIPLES OF CHRIST. The Disciples of Christ lay especial emphasis upon the unity of the body of Christ, the church, by a return to the Apostolic teaching and practice. The fiscal year of their organized activities closes 30 June. Their mission work, home and foreign; their hospital work; their work for dependent children and the aged; ministerial relief and pension, and church erection are conducted through the United Christian Missionary Society. The work of the women is included in the Society's work. Reports, as of 30 June 1922, show a total membership in the United States and Canada of 1,243,358, a gain for the year of 33,335. The total Bible school enrollment for the world is 1,093,838, a gain of 29,948 during the year. The denomination has a total of 9,397 churches; 5,679 white preachers and 247 negro preachers. The total amount of money contributed to missions and education in 1922 was \$3,608,942.11. The average offering per church in the United States and Canada was \$414.15, a gain per church of \$104.14. The number of churches making missionary offerings during the year was 6,169, a gain of 220. The number of churches giving \$1,000 or more each was 552. The number of churches giving between \$500 and \$1,000 each was 429. The Disciples are at work in 10 great missionary fields of the world. In Africa they have 4 stations, 332 out-stations, 130 schools, 3 orphanages, 42 missionaries and 574 native workers.

In China there are 6 stations, 14 out-stations, 39 schools, 68 missionaries, 169 native workers; in India 13 stations, 12 out-stations, 40 schools, 2 orphanages, 86 missionaries, 491 native workers; in Japan 4 stations, 30 out-stations, 15 schools, 33 missionaries, 141 native workers; in the Philippines 4 stations, 30 out-stations, 6 schools, 19 missionaries, 71 native workers; in Tibet 1 station, 1 school, 1 orphanage, 12 missionaries, 24 native workers; in Porto Rico 1 station, 17 out-stations, 1 school, 8 missionaries, 42 native workers; in Mexico 2 stations, 5 out-stations, 5 schools, one orphanage, 18 missionaries, 13 native workers; in Jamaica 3 stations, 22 churches, 10 schools, 2 missionaries, 18 native workers; in South America 2 stations, 6 out-stations, 1 school, 20 missionaries, 13 native workers. In the home field the Disciples have a vigorous Department

of Evangelism which reported 100,000 additions to the church in the six weeks evangelistic period ending with Easter. They maintain a flourishing mission among the French in Louisiana and have schools for Highlanders at Hazel Green, Ky.; Livingston, Tenn., and Moorehead, Ky. They also maintain a Russian church and Community House in New York City; a flourishing mission among the Slavok people in Bayonne, N. J.; a Brotherhood and Fraternity House in Chicago among the Russians; a flourishing Bohemian church in Cleveland, and a half dozen missions in the coke regions of Pennsylvania.

They have a new mission home for Indian children at White Swan, Wash. Schools for negroes are maintained at Edwards, Miss., Hawkins, Texas, Lum, Ala., and Martinsville, Va. There are thriving missions for the Orientals: Chinese in Portland and San Francisco, and Japanese in Los Angeles, San Bernardino and Berkeley, Calif. Missions for Mexicans are located at San Antonio, Taboli, Robstown and Lockhart, Texas. There is a missionary organization in nearly every State in the Union, and in co-operation with these boards the national organization of the church is maintaining mission churches and evangelistic work in the United States and Canada. A Church Erection Department assists new and weak congregations to obtain modern, adequate buildings. The Department of Ministry provides for both the relief and the pensioning of ministers. The pension fund totals \$222,348.34. Through the Department of Benevolence six homes for orphan and other unfortunate children, and six homes for aged, dependent members of the church are maintained. Through the Department of Religious Education a force of 27 trained specialists is maintained. The Department of Missionary Education is an active one. The Disciples of Christ publish the *World Call*, a 64 page and cover magazine with a circulation of 58,000, which is self supporting and approximately 50 additional papers. The value of property invested in missionary and benevolent work is \$7,465,440.97. Through the Board of Education the church directs and assists in the maintenance of 24 colleges. Educational assets are valued at \$15,421,109. It maintains a Department of Social Welfare, and Association for the Promotion of Christian Unity. The Men and Millions Movement of the Disciples of Christ is finishing up the collection of special pledges amounting to approximately \$7,105,000.

J. H. MOHORTER,

United Christian Missionary Society, St. Louis, Mo.

DISTRICT OF COLUMBIA, the seat of the Federal Government of the United States. It has an area of 70 square miles, and in 1920 had a population of 437,571. It lies on the west central border of Maryland on the Potomac River, opposite Virginia. The city of Washington and the District are co-terminous.

Religion.—The Christian denominations have an aggregate church membership of 164,413, including 51,421 Roman Catholics, 39,978 Baptists, 20,836 Methodists, 18,295 Episcopalians, 9,338 Presbyterians, 3,255 Congregationalists and 3,050

Lutherans. The Christian Science denomination is also represented by a strong membership.

Education.—There are in the District separate schools for white and colored pupils. White teachers number 1,515 and white pupils number 46,695. Negro teachers number 683 and negro pupils number 20,360. There are nine public high schools, with 428 teachers and 9,172 pupils; 26 private schools, with 2,500 pupils, and two public normal schools for the training of elementary teachers, with 28 teachers and 240 pupils. In 1921, the total expenditure on primary education was \$47,120,203. For higher education there are the Georgetown University, George Washington University, the Catholic University, the American University and National Methodist University, and Howard University for negroes.

Finances.—The revenues of the District of Columbia are derived from corporation taxes, licenses from various kinds of businesses and general real property taxes, and from appropriations by the United States, which approximate 41 per cent of the total revenues. At the beginning of the last fiscal year the balance on hand was \$8,432,305. Receipts during the ensuing fiscal year amounted to \$24,947,424. Disbursements for the same period amounted to \$24,268,676, leaving a balance on hand at the beginning of the present fiscal year of \$9,111,053. At the beginning of 1922, the net bonded debt of the District amounted to \$1,166,626. The assessed valuation of real property amounted to \$454,795,000; of tangible personal property, \$116,928,920; of intangible personal property, \$323,949,583.

Production and Industry.—Most activity in the District is governmental, the Federal departments employing over 100,000 persons. There are considerable industries, however, the output of which is consumed locally. The last manufacturing census reported \$63,808,179 invested in industries in the District, which employed 10,482 wage earners, used raw materials valued at \$30,940,100, and turned out products valued at \$68,826,570 during the census year.

Communications.—The railroad mileage of the District is 36, to which may be added 215 miles of electric street railways. The District is one of the chief railway stopping points between the North and South and the great Union Station at Washington has the most up-to-date methods for handling large passenger travel. Navigation is carried on via the Potomac, which flows into Chesapeake Bay. The river has been deepened and otherwise prepared so as to accommodate heavy war vessels and large commercial vessels.

Government.—The government of the District is administered by a board of three commissioners, two of whom are appointed from civil life by the President of the United States and confirmed by the Senate. They are appointed for three-year terms. The third commissioner is detailed from time to time by the President from the engineering corps of the United States Army. This commissioner must have had at least 15 years' experience in the Army Engineering Corps. The commissioners have jurisdiction over all ordinary features of municipal government, but the legislative power is vested in the Congress of the United States. Both the House of Representatives and the Senate have a committee on

the District of Columbia. Residents of the District do not vote. The secretary to the board of commissioners in 1922 was Daniel E. Garges.

DOANE COLLEGE, a Congregational educational institution, founded in 1872 and located at Crete, Neb. In 1921-22 they had a faculty of 20 members, 248 students, property valued at \$740,175.74 and an income of \$64,391.22. Figures for 1922-23 not given. John N. Bennett, LL.D., is president.

DOBRUDJA, one of the historic divisions of the Old Kingdom of Rumania. It has an area of 8,969 square miles and a population of 381,306. The chief city is Kustenje (Constantza).

DOCKS AND HARBORS. See **RIVERS AND HARBORS.**

DODD, Ira Seymour, clergyman: b. Montclair, N. J., 2 March 1842; d. Natanuck, R. I., 4 Aug., 1922. After graduation at Yale in 1867 he studied at the Union Theological Seminary in 1868-69 and at Princeton Theological Seminary, from which he was graduated in 1870. He was ordained in 1870 and served in home mission work in Kansas. He held several pastorates in Maine and then became pastor of the Presbyterian Church at Riverdale-on-Hudson, from which he retired in 1916, becoming pastor emeritus. He served in the Civil War and took part in the campaigns in Fredericksburg and Chancellorsville. He published several books, including 'A Lesson from the Upper Room' (1895); 'The Story of the Rappahannock' (1898); 'The Brother and the Brotherhood' (1908); and 'The Riverdale Hymn Book' (1912). He was a brother of Frank H. Dodd and Robert H. Dodd, of the publishing firm of Dodd, Mead & Co., New York.

DODD, William Edward, American university professor: b. Clayton, N. C., 21 Oct. 1869. He was graduated from the Virginia Polytechnic Institute, B.S. in 1895; M.S. in 1897, and was an instructor in history there from 1895-97. In 1900 he was graduated from the University of Leipzig with the degree of Ph.D. The same year he was made professor of history at Randolph-Macon College, Ashland, Va. and held the position until 1908 when he was chosen professor of American history in the University of Chicago, which professorship he still holds. He is a member of the American Historical Association and of the Mississippi Valley Historical Association. He has published 'Jefferson's Rückkehr zur Politik, 1796' (1900); 'Life of Nathaniel Macon' (1903); co-translator Lamprecht's 'What Is History' (1905); 'Life of Jefferson Davis' (1907); 'Statesmen of the Old South' (1911); 'Woodrow Wilson and His Work' (1920). In addition he was editor and joint author of 'The Riverside History of the United States' (1915) and 'The Cotton Kingdom' (in *Chronicles of America* series). He has been also a frequent contributor of historical articles to reviews and magazines and is a member of the National Board for Historical Service.

DODECANESE, or **TWELVE ISLANDS**, an island group lying off the coast of Asia Minor. Sovereignty of the islands passed to Italy after the war with Turkey in 1911-12, and a clause of the Treaty of Sévres (1920) confirmed that sovereignty. The failure of the Treaty to be ratified by Turkey left this question of sovereignty one of the many problems connected with the Near East. See **TURKEY.**

DODGE, Bayard, President of the Syrian Protestant College at Beirut: son of Cleveland H. Dodge of New York. He was graduated at Princeton University and Union Theological Seminary. After taking part of his examinations for licentiate as a Presbyterian clergyman before the Presbytery of New York in 1913, he decided not to be ordained but to go to Syria as a Y. M. C. A. worker and member of the faculty of the college at Beirut, often called the American University, to which his father has contributed a large hall for meetings and recreation. In 1920, Mr. Dodge, being made director of American relief activities in Syria, distributed about £17,000 (about \$85,000) of his father's money among the poor in Syria and returned to the United States to plead for help, particularly for the children in Armenia and Syria. Mr. Dodge succeeded the late Dr. Howard Bliss at Beirut, whose daughter he married.

DOMINICA. See **LEEWARD ISLANDS.**

DOMINICAN REPUBLIC, a Latin-American republic occupying the eastern half of the island of Santo Domingo in the West Indies. The area of the republic is 19,332 square miles with over 1,000 miles of coast line and 193 miles of frontier with Haiti. According to the census of 1921 the population was 897,405, mainly composed of creoles of Spanish and Indian blood. In the cities there are many Turks and Syrians engaged in the dry goods trade. The language is Spanish but along the frontier the Haitian patois is spoken and there are descendants of American negro immigrants who speak a corrupt form of English. The capital, Santo Domingo, has a population of 45,021. Other cities, with their populations, are Puerto Plata, 26,073; Santiago de los Caballeros, 71,956; San Pedro de Macoris, 25,226; La Vega, 58,041; San Francisco de Macoris, 42,432; Moca, 38,089.

Education.—Primary education is free and compulsory. The annual expenditure on education is about \$1,000,000. There were at the latest computation 996 primary schools in the republic with 1,601 teachers and 111,378 pupils. Manual training and instruction in agriculture are being introduced in the primary system. There are six secondary schools and one university.

Finance.—The budget for 1921 contemplated a revenue of \$11,631,400 and an expenditure of \$5,389,698. Under treaty with the United States in 1907 the republic issued five per cent bonds to the amount of \$20,000,000 secured as of principal and interest by a first lien on the customs revenues of the country. The United States appoints the Receiver-General of Dominican Customs. The total pub-

lic debt of the republic in 1922 was \$13,100,786. This sum was made up as follows:

Bond issue of 1908.....	\$20,000,000	
Redeemed bonds held in amortization fund.....	9,174,750	
Cash in amortization fund.....	618,221	
Unsettled balance.....		\$10,207,029
Bond issue of 1918.....	\$4,161,300	
Redeemed bonds.....	1,113,200	
Cash in amortization fund.....	154,342	
Unsettled balance.....		\$2,893,757
Total indebtedness.....		<u>\$13,100,786</u>

Religion.—The Roman Catholic is the religion of the state but all forms are tolerated. The Church has one archbishop who also is apostolic delegate to Santo Domingo, Porto Rico and Cuba. Porto Rico is a suffragan see to the archbishopric of Santo Domingo.

Agriculture, etc.—Tilling the soil is the chief occupation of the inhabitants. Sugar growing is flourishing and the planting of tobacco is on the increase. Cacao is grown in the eastern part of the republic the yield being about 51,000,000 pounds yearly. The year 1920 brought great prosperity to the sugar industry. The crop was the largest on record, totaling 177,736 tons, while the average sales price was \$12.65 per hundredweight. The total sugar shipments were valued at \$45,739,878, representing in value 78 per cent of all Dominican exports. In addition to sugar, there are three other staples, tobacco, cacao and coffee, which exert a great influence on the economic life of the country. The cacao production for 1920 was 51,000,000 pounds. In the same year the coffee crop proved a failure due to a prolonged drought. Exports that year were the lowest on record for the decade and amounted to only 1,358,826 pounds, valued at \$265,937. The forest area of the republic is about 9,500,000 acres. The live stock census of 1921 showed 360,155 cows, 199,127 calves, 87,876 oxen, 674,232 swine, 705,000 goats, 2,949,053 hens, 162,800 horses and 64,860 mules. Nearly all kinds of minerals are found especially gold and silver. Iron and petroleum have been discovered in Azua. Some lignite of inferior quality has been mined and also some anthracite. Limestone and sandstone are quarried for building purposes. Cigars and cigarettes are manufactured in increasing quantities, and modern factories supply the home demand. The cultivation of bananas is a new industry but the soil has been found favorable and success seems assured for this crop.

Commerce.—The foreign trade of the republic reached a new high record in 1920, amounting to \$105,257,117, an increase of \$43,636,098, or 71 per cent over the trade of 1919 and 535 per cent greater than the trade in 1913. Merchandise valued at \$46,768,258 was imported through the various customhouses. Exports climbed to \$58,767,041 the same year. The phenomenal gain in exports is due entirely to the demand for sugar, which prevailed in the early spring and caused this staple to double in value within three months. In 1920 the United States furnished 77.05 per cent of the imports and Porto Rico 13.08 per cent. Of the exports the United States took 87.03 per cent and France

5.2 per cent. Imports in 1921 amounted to \$24,585,327 and exports to \$20,614,048.

Army.—The only armed force of the republic in 1922 was the native constabulary, officered by Americans. During the same year there were in the republic 14 companies of American marines aggregating about 1,500 men. The republic has no navy.

Communications.—Good roads are now being constructed to connect the principal cities of the island. About 400 miles of improved roads have been completed. There are two railways in the island: one 73 miles from Samana to La Vega with two small branch lines of eight miles each, and the Dominican Central, a state line, from Puerta Plata to Santiago and Moca, 60 miles in length. In addition there are about 225 miles of private railways on the sugar plantations. The postal and telegraph services have been united. There are 32 post offices, 918 miles of telephone line in operation and 311 miles of land telegraphs. There is submarine telegraph communication with New York and Porto Rico. There are three small wireless stations and other more powerful stations established by the United States military government.

Government.—The President of the republic is chosen by electors for a term of six years. The executive power is exercised jointly by the president and 7 ministers. This government has been temporarily set aside since 29 Nov. 1916, when the United States set up a military government headed by American naval officers. The military governor combines the functions of president and congress and naval officers of the United States administer the several government departments.

History.—On 26 Dec. 1921 the Senate Committee which investigated conditions in the Dominican Republic advised against the withdrawal of American troops therefrom on the ground that the conditions prescribed during the preceding summer by President Harding as a preliminary to such withdrawal had not been complied with. On 16 Feb. 1922, Horace G. Knowles, former Minister to the Dominican Republic, was alleged to have charged the United States with violating the Monroe Doctrine in dealing with the republic and to have said that, under American occupation, banditry, instead of decreasing, had increased ten-fold, "due to acts of irresponsible young marines." On 15 April it was announced that the United States Marines would not be withdrawn from the republic until 1 July 1924; that the withdrawal depended altogether upon the attitude of the Dominicans themselves; that an external loan of \$10,000,000 would be arranged for refunding current debts and providing for additional public works. At the time it was stated that, due to political unrest and business depression, the Treasury had been so depleted that the Government payroll could not be met and that officials and employees could draw but half pay, the balance to be credited to their respective accounts, and to be payable in two, four and six months. On 11 July Secretary of State Hughes announced a plan for the withdrawal of American troops from the republic and the restoration to the people of full governmental powers. The plan provided for the setting up of a provisional government,

composed of Dominican citizens, to put into effect desired legislative reforms, to amend the constitution, and to hold general elections for the establishment of a permanent government, without intervention by the United States. (See *Current History*, August 1922.) On 22 July Horace K. Knowles, counsel for the deposed Constitutional Government of the republic, announced his acceptance of the plan. On 6 October it was announced in Washington that Juan Bautista Vicini Burgos had been selected as provisional President of the republic, and on 21 October he took the oath of office. His Cabinet was announced as follows: Foreign Affairs, Angel Morales; Interior and Police, Jose del Carmen Ariza; Justice and Instruction, C. Armando Rodriguez; Public Works, Octavio Acevedo; Agriculture, Pedro A. Perez; Health, Manuel Maria Sanabia. President Harding cabled his congratulations. The next day the new Cabinet took charge of the executive departments and the National Palace was turned over to the provisional government. The American Military Governor, Admiral Samuel S. Robinson, sailed with his staff on 24 October. Command of the American military forces was assumed by Gen. Harry Lee. These forces — about 1,500 marines — it was stated would remain until the setting up of a permanent government, but would be concentrated in two or three points. The Dominican police were entrusted with the maintenance of peace and order, unless outbreaks should get beyond their control.

DONAHUE, Patrick James, Anglo-American Catholic clergyman: b. Malvern, England, 15 April 1849; d. Wheeling, W. Va., 4 Oct. 1922. He was graduated from the University of London in 1869; came to America in 1873; studied law and practised in Washington, D. C., for several years, but gave up the legal profession in 1882 and entered Saint Mary's Seminary, Baltimore. Ordained in 1885, he became assistant rector at Saint John's Church, Baltimore. In 1886 he was appointed chancellor of the archdiocese of Baltimore, which he held until 1891. From 1891 to 1894 he was rector of the Baltimore Cathedral. In 1886 he accompanied the late Cardinal Gibbons to Rome as his secretary. He was consecrated bishop of Wheeling, W. Va., 8 April 1894. Columbian (now George Washington), gave him the degree of LL.B. in 1876.

DOW, Arthur Wesley, American artist: b. Ipswich, Mass., in 1857; d. New York, 13 Dec. 1922. He was educated in Ipswich and Newburyport schools, studied art in Boston and then went to Paris, where he was a pupil of Boulanger and Lefebvre. In 1886-87 he exhibited at the salon and again in 1889 when he received honorable mention. At the Buffalo Exposition he was given a medal. For several years he was curator of Japanese art in the Boston Museum of Fine Arts. From 1895 to 1904 he was instructor of art at the Pratt Institute, Brooklyn. From 1897 to 1903 he was instructor of composition at the Art Students' League, New York. For several years he was director of the summer school of art at Ipswich, Mass. Since 1904 he had been professor of fine arts at Teachers' College, Columbia University. Mr. Dow was a member of many artistic and educational societies, including the Japanese So-

ciety. He was an authority on Japanese art and also on fine printing. He was a skilled craftsman as well as a painter and he printed 'Along Ipswich River' a series of color prints from wood blocks, 'Ipswich Prints,' for school use, reproducing scenes in the vicinity of his birthplace and summer home. He was an expert on design and his 'Composition' (1898), went through seven editions. His pictures of the 'Great Canyon' attracted much attention a few years ago.

DOYLE, Alexander, American sculptor: b. Steubenville, Ohio, 28 Jan. 1858; d. Boston, Mass., 21 Dec. 1922. His early years were spent in Saint Louis, Mo., where his father removed to engage in the marble business and thence in Italy to which his parents took him. He went to an English school in Leghorn. Returning to America he completed his education in the high school at Louisville, Ky. In 1874, he returned to Italy, studied sculpture at the Carrara Academy three years and also learned painting and music. At the age of 20 he took a prize for a design for a public monument under the severe conditions that govern Italian competition. He acted as organist in one of the Italian cathedrals and was made an honorary member of the Royal Raphael Academy of Urbino. He returned to America in 1878 and settled in New York, where he soon became a much sought-after sculptor. In 1888 Mr. Doyle then 30 "had executed more public monuments and statues in the United States than any other sculptor and was the author of more than one-fifth of those standing in the Union." On the death of his father in 1898 Mr. Doyle retired from his profession to care for the stone quarrying business left to him. In 1906 he made, however, a statue to Edwin Stanton, Secretary of War, under President Lincoln, in his native city of Steubenville, giving his talent gratuitously. This was completed and cast in bronze in 1911. In 1912 Mr. Doyle gave up his studio in New York and removed to Dedham, Mass., spending his summers on Squirrel Island, Me. His last work was a statue of President Lincoln, completed a few months before his death. His works include: John Howard Payne, Washington, D. C.; Bishop Pinckney, Sen. B. H. Hill, General Garfield; portrait group of two Cupples children, Saint Louis, Mo.; bronze statues of Gens. Albert Sidney Johnston and Robert E. Lee, New Orleans; Sergeant Jasper, Savannah; Gen. Philip Schuyler, Saratoga; Gen. James B. Steedman, Toledo; Horace Greeley, New York; Admiral Semmes, Mobile; Gen. R. H. Anderson, Savannah; Mrs. Emma Willard, Troy, N. Y.; Gen. G. H. Ward, Worcester, Mass.; Senators Thomas H. Benton, Frank P. Blair and John E. Kenna, for United States Capitol, Washington; Francis Scott Key, Frederick, Md.; Soldiers' Monument, New Haven, and Soldiers' Monument, Montgomery, Ala.

DRAINAGE. See RECLAMATION.

DRAKE, Francis Cornelius, American journalist: b. Palmyra, N. Y., in 1870; d. New York, 17 Feb. 1922. He was educated at the College of the City of New York and began journalistic work in 1890 as a staff-artist on *The Baltimore American*. He worked for McClure's Syndicate and *The New York Herald* and in 1896 became art director of *The New*

York Herald. While holding this last position he devised the first method of printing halftones on fast presses and ordinary news-print paper. In 1903 he went back to *The Herald* and in 1906 became its Sunday editor. In 1908 he joined *The World* as special writer and editor of the Metropolitan Section. Since 1911 he had been general art director of *The World*. In 1921 he organized the American Liberties League in opposition to the Volstead Act and led the anti-prohibition parade on Fifth Avenue, 4 July 1921.

DRAKE UNIVERSITY, non-sectarian educational institution, founded in 1881 and located as Des Moines, Iowa. In 1922-23 it had a faculty of 78 members, 2,000 students, property valued at \$752,967.61. Income figures for 1922-23 are not given, but for 1921-22 they were \$255,775.57. Daniel W. Morehouse, Ph.D., is president.

DRAMA. The fall season of 1921, following on a previous one of crowded theatres and numberless productions, began rather recklessly. Production after production was rushed before the public, many of them failures, a few successes. The year 1922, therefore, began with numerous survivals from the old year. The more important of these were 'Tangerine,' a musical play that ran on into 337 performances; 'Dulcy,' an American comedy by George S. Kaufman and Marc Connelly; Zoe Atkin's 'Daddy's Gone a-Hunting'; 'Six Cylinder Love' by William Anthony McGuire; Irving Berlin's 'Music Box Revue,' which turned out to be the most successful review of the year; 'The Circle,' a comedy by Somerset Maugham, with John Drew and Mrs. Leslie Carter in the cast; Clemence Dane's 'A Bill of Divorcement,' a play on the divorce laws in England; 'Kiki,' a farcical comedy from the French of André Picard, with Lenore Ulric as its star, destined to run the entire year; Eugene O'Neill's 'Anna Christie,' the study of a prostitute, a coal barge captain and an Irish stoker, finely acted by Pauline Lord, and later awarded the Pulitzer prize of \$1,000 as the best "American" play of the year; Clare Kummer's 'The Mountain Man,' a comedy with some, though unequal, charm, starring Sidney Blackmer; A. A. Milne's 'The Dover Road'; 'Bulldog Drummond,' an English melodrama, and Walter Hackett's 'Captain Applejack.'

January brought forth few new plays. There was the general impression that the great number of failures in the autumn and the extravagant efforts of managers to mend matters by sending one new venture after another, had exhausted the stock of plays on hand. Arthur Hopkins revived unsuccessfully 'The Deluge,' an adaptation from the Swedish of Henning Berger. 'S. S. Tenacity,' a comedy in three acts from the French of Charles Vildrac, was produced with excellent finish and taste by Augustin Duncan at the Belmont Theatre, but despite its obvious merits, failed to run beyond a few weeks. Samuel Shipman's 'Lawful Larceny' began in January a run that was to outlast the season.

'Rosa Machree,' by Edward E. Rose, 'Drifting,' by John Colton and D. H. Andrews, and Hartley Manner's 'The National Anthem,'

had short careers. 'Marjolaine,' Louis N. Parker's 'Pomander Walk,' set to music, was launched upon a prosperous course. Fritz Leiber produced in January with tolerable success Shakespeare's 'Macbeth,' 'Julius Caesar' and 'Romeo and Juliet.' 'The Blue Kitten,' from the French, and 'Elsie Janis and Her Gang' added to the number of musical shows on Broadway. And most important of all the theatrical events at the beginning of the year, came the Theatre Guild's production of Andreiev's 'He Who Gets Slapped,' a poetic satire of life, with a philosopher turned clown as its central figure. On the whole the production was soft and undistinguished, in the acting especially, but it was a highly commendable venture on the part of the Guild. 'The Nest' from Paul Gerald's 'Les Noces D'Argent,' distinguished by the acting of Lucile Watson, deserved a longer run even than the 23 weeks that it achieved. 'Marie Lohr,' a London favorite after two efforts proved a failure in New York. Arthur Davison Ficke's poetic drama, 'Mr. Faust,' met with small success at the Provincetown Theatre. Doris Keane, beginning in January, carried 'The Czarina,' a historical comedy adapted by Edward Sheldon from the Hungarian, through 136 performances. Galsworthy's 'Pigeon,' with Whitford Kane in the part of the old artist; Jules Eckert Goodman's 'The Law Breaker,' and 'Madame Pierre' from Brieux's 'Les Hanneçons,' capably acted by Roland Young and Estelle Winwood, were produced with fairly successful results. 'To the Ladies,' the second comedy by the authors of 'Dulcy,' began a long and happy run, and supplied in one scene at least, the business men's banquet, one of the best bits of American comedy in recent years. Meanwhile, there arrived on our shores the long heralded 'Chauve-Souris,' of the Bat Theatre of Moscow, under the direction of M. Nikita Balieff. The 'Chauve-Souris,' though it made no such claims, was applauded by many of the critics and public as great art. It was, however, a remarkably even and charmingly lovable form of vaudeville and it entirely deserved the triumphs that from the very first night came to it.

Toward the end of February the Theatre Guild made a second venture, greatly to its credit. Bernard Shaw's 'Back to Methuselah' was presented in all its astonishing and garrulous volume. The Guild presented the play without cuts, though three evenings were necessary to act the whole of it. 'Back to Methuselah' proved to be an entertainment that with regard to the dramatist, the designing and the actors, was at times tedious and poorly done and at times brilliant and full of ideas and invention and courage.

In March Eugene O'Neill had a tragi-comedy, 'The First Man,' produced at the Neighborhood Playhouse by Augustin Duncan, which lasted through a run of only a few weeks. But not many days later at the Provincetown Theatre 'The Hairy Ape' began its highly successful career and established itself as the most important contribution to the year's drama. 'The Hairy Ape' tells the story of Yank, a stoker on an Atlantic liner. He feels himself to be the power behind the ship, a part of the strong forces of the world. The daughter of one of

the company directors comes down to see what the furnace-room is like. At the sight of Yank she gives a cry of disgust and horror. Later, ashore, the Yank tries to avenge this insult to his self-respect and pride. But he is helpless against society, and is sent to prison. Finally he tries to join the I. W. W., but is kicked out. He ends by being crushed to death by a monster ape and thrown by the beast into the cage. 'The Hairy Ape' is neither socialistic nor realistic but rather an example of modern expressionism in the theatre. Its production was at times very interesting. The most striking thing about 'The Hairy Ape' was the creation in dramatic form of a genuine fable.

'The First Fifty Years' by Henry Myers, a play of married life, acted by Clare Eames and Tom Powers, proved rather above the season's average both as to the promise of the play and as to the acting. Maurice Browne and Ellen Von Volkenburg gave with limited success a short season at the Greenwich Village Theatre, taking for their main offerings Shaw's 'Candida' and Strindberg's 'Creditors.' A delightful comedy of youth, 'The Green Ring,' from the Russian of Zanaida Hippus, at the Neighborhood Playhouse, was one of the attractions of the spring. And toward summer the Theatre Guild produced what in Germany seems to have been the most successful of the long list of expressionistic plays that have appeared since the great war, George Kaiser's 'From Morn till Midnight.' This play is the story of a provincial bank cashier who, knocked off his balance by the sight of a beautiful lady, steals 60,000 marks from the bank and follows her. He is repulsed, and with that he sets out on an orgy of dissipations and excess. He comes to loathe the vileness of the world of men, and, taking refuge in the hall of the Salvation Army, shoots himself. 'From Morn till Midnight' may be taken as representative of its theory and school. The effects were achieved by devising many short scenes and by means of short explosive speeches that are supposed to reveal violent flashes of the character's inmost feelings.

The season came to a happy close with a revival of Sheridan's 'Rivals' by the Players' Club, a charming performance made more charming by the screens devised for it by Mr. Norman-Bel Geddes. Meantime on Broadway such mystery plays as 'The Bat' and 'The Cat and the Canary' flourished alongside the plain comedies and musical shows and the follies, of which the last kind of entertainment grows steadily in skill and display.

Thus ended the season of 1921-22, a season characterized by plunging and chaos on the part of the managers, some few successes and many failures.

But signs for a better turn were already in evidence, and the season of 1922-23 held much promise. Up to the close of the year it could be said that the occurrence of Broadway failures was almost as marked as of old. But alongside these practical failures ran the ambitious attempts of the managers toward plays like Hauptmann's 'Rose Bernd,' in which Arthur Hopkins presented Ethel Barrymore, like Galsworthy's 'Loyalties' and the Czechoslovakian play 'R. U. R.' Of these pieces 'Loyalties' proved the most successful. It is

the story of the struggle of a Jew against the social prejudice around him. Reflections on the war, on justice, on class loyalty are deftly laid on to the machinery of an expert melodrama. George Kelly, an actor and sketch writer of the vaudeville world, produced a promising first play, 'The Torch Bearers,' with many sharply observed details from the American little theatre fad. Brothers Capek's 'R. U. R.,' which the Theatre Guild brought over from Prague, caught the favor of the town. It is a satire, sometimes good, on industrialism, and turns on the invention of mechanical soulless men who finally destroy their human inventors. The Equity Players for their first venture produced with moderate success the Spanish play 'Malvoloca.' And Brock Pemberton, after a failure with one Italian play, produced what was, in form, idea and actuality, the most brilliant and original drama of the autumn, Pirandello's 'Six Characters in Search of an Author.'

The New Year came to a theatre full of high hopes. The air was full of promises. Among the things promised were Hopkins' production of 'Hamlet,' with settings by Robert Edmond Jones and with John Barrymore as *Hamlet*; David Warfield in *Shylock*, Ethel Barrymore and Jane Cowl as *Juliet*; the continuation of the 'Chauve-Souris'; the coming of actors from the Theatre Français, and the visit of the Moscow Art Theatre under the direction of their founder, Stanislavsky.

STARK YOUNG,
Editor, The New Republic and Theatre Arts Magazine; author of 'The Flower in Drama.'

DREXEL INSTITUTE OF ART, SCIENCE AND INDUSTRY, a non-sectarian co-educational institution, founded in 1891 and located at Philadelphia, Pa. In 1922-23 it had a faculty of 55 day and 140 evening members, 718 day and 2,170 evening students and property valued at \$2,165,895. Income figures for 1922-23 not given but in 1921-22 they were \$378,589.43. Kenneth Gordon Matheson, A.M., LL.D., is president.

DRINKWATER, John, English poet and playwright: b. Leightonstone, England, 1 June 1882. He was educated at Oxford High School and worked for 12 years as a clerk in insurance offices before he began to devote his time to theatrical enterprises. He was a co-founder of the Pilgrim Players which developed into the Birmingham Repertory Theatre, of which he became manager. His publications include 'Poems' (1908-14); 'Cophetua' (one-act play in verse, 1911); 'Rebellion' (a three-act play in verse, 1914); 'Swords and Ploughshares' (1915); 'Olton Pools' (1916); 'Pawns' (three one-act plays in verse, 1917); 'Tides' (1917); 'Abraham Lincoln: a Play' (1918); 'William Morris: a Study' (1912); 'Swinburne: a Study' (1913); 'The Lyric: an Essay' (1915); 'Prose Papers' (1917); 'Mary Stuart' (play, 1921). He edited St. John Hankin's plays, the poems of Philip Sidney, 'The Way of Poetry,' 'An Anthology for Schools,' etc., and contributed to *Georgian Poetry*, *Oxford Book of Victorian Verse*, *New Numbers*, *Edinburgh*, *English*, *Fortnightly*, *Nineteenth Century*, *Quarterly*, and other reviews, also *The Nation*, and *Spectator*. Several of his plays have been produced in the United States.

of which 'Abraham Lincoln' probably achieved the greatest success.

DROPSIE COLLEGE, a non-sectarian co-educational institution for Hebrew and Cognate learning, founded in 1907 and located at Philadelphia, Pa. In 1922-23 it had a faculty of eight members, 46 students, property valued at \$843,880.94 and an income of \$40,428.17. Cyrus Adler, Ph.D., is president.

DRURY COLLEGE, a co-educational institution affiliated with Congregational Church, founded in 1873 and located at Springfield, Mo. In 1922-23 it had a faculty of 27 members, 415 students, property valued at \$500,000, and an income of \$65,000. Thomas William Nadal, LL.D., is president.

DUBUQUE, University of, a Presbyterian co-educational institution founded in 1852 and located at Dubuque, Iowa. In 1922-23 it had a faculty of 25 members, 279 students, property valued at \$550,087.37 and an income of \$179,868.74. Cornellius M. Steffens, D.D., is president.

DUNKARDS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

DUNNING, William Archibald, American university professor: b. Plainfield, N. J., about 1859; d. New York City, 25 Aug. 1922. He was graduated from Columbia University with the degrees of A.B. in 1881, A.M. in 1884 and Ph.D. in 1885. In 1886 he joined the Columbia faculty, of which he continued to be a member until his death, serving successively as Fellow, lecturer and instructor in political science and history until 1891; as adjunct professor and professor of history until 1903, and as Lieber professor of history and political philosophy thereafter. He received the degree of LL.D. from Columbia in 1904 and the degree of Litt. D. from Dartmouth College in 1916. From 1894 until 1903 he was managing editor of the *Political Science Quarterly*; in 1913 he was president of the American Historical Association. He was a member, also, of the American Political Science Association, the New York Historical Society, the Massachusetts Historical Society and various clubs. Although recognized everywhere as a leading authority on American history and politics, Professor Dunning did not come prominently into the public eye until in 1919 when he appeared as a witness for Henry Ford in the latter's \$1,000,000 libel suit against the *Chicago Tribune*. His testimony was to the effect that in his opinion Mr. Ford's writings were not anarchistic. Professor Dunning's publications include: 'Essays on the Civil War and the Reconstruction' (1898); 'History of Political Theories,' 3 vols. (1902-20); 'Reconstruction, Political and Economic' (1907); 'Carl Schurz's Political Career, 1869-1906' (with Frederick Bancroft, 1908); 'The British Empire and the United States' (1914); also numerous articles on political and historical subjects, contributed to various magazines.

DURAND-RUEL, Paul, French art-dealer: b. Paris, 1832; d. Paris, 24 Feb. 1922. He was a typical Parisian and born two years after the Revolution of 1830 had lived through the reign of Louis Philippe, the Second Repub-

lic, the Second Empire and saw the jubilee of the Third Republic. It was Durand-Ruel's persistency and conviction that ultimately forced the Impressionists on the public. One of Durand-Ruel's biggest deals was probably the purchase jointly with MM. Bernheim-Jeune and Cassier of Berlin of M. Pellerin's collection of works by Manet. Most of the best of them went to Germany. The Louvre did not buy even one.

DUTCH EAST INDIES, the possessions of Holland in the East Indies consisting of islands situated between 6' N. and 11' S. Lat. and between 95' and 141' E. Long. These possessions include Java and Madura, Sumatra, Borneo, Riau-Lingga Archipelago, Banca, Billiton, Celebes, the Molucca Archipelago, the Sunda Islands, and a part of New Guinea. The area and population of the several divisions are shown in the following table:

DIVISION	Area sq. miles	Popula- tion (Census, Nov. 1920)
Java and Madura.....	50,557	35,017,204
Sumatra, West Coast.....	15,494	1,522,227
Tapaneli.....	16,167	840,371
Sumatra, East Coast.....	35,312	1,197,554
Sumatra Benkulen.....	9,399	257,140
Island Lampongs.....	11,284	233,903
Palembang.....	32,574	827,985
Djambi.....	19,038	233,344
Atjeh.....	20,471	736,348
Riau-Lingga Archipelago.....	16,301	223,104
Banca.....	4,446	154,114
Billiton.....	1,863	68,582
Borneo, West Coast.....	55,825	605,399
Borneo, South and East.....	156,912	1,020,054
Celebes.....	49,390	2,328,587
Island Menado.....	22,680	760,676
Amboina.....	13,118	243,543
Molucca Ternate.....	9,663	149,241
Islands New Guinea.....	121,339	
Timor Archipelago.....	17,698	1,146,657
Bali and Lombok.....	4,065	1,565,014
Total.....	683,000	49,161,047

Of this population, 169,355 are Europeans and 878,986 are Orientals, chiefly Chinese and Arabs.

Religion.—Most of the natives are Mohammedans, but there are also several millions of Christians and Buddhists. The Roman Catholic Church has about 130 clergymen in the colony and the Reformed Church about 70.

Education.—There are in the colony 196 public European primary schools and 53 private schools, 34 public and 14 private Dutch-Chinese primary schools, 146 public and 67 private Dutch-vernacular primary schools, 1,845 public second-class for natives schools, 2,368 private schools for natives, 7,183 Desa or rudimentary schools, 18 public and 5 private Mulo or extended primary schools, 7 public and 6 private secondary schools. The total attendance in these schools is about 900,000, with a teaching staff numbering 14,500. The total expenditure on education in 1921 was 14,000,000 guilders.

Army.—There is compulsory military service for Europeans. The colonial army is 75 per cent native and 25 per cent European. The

strength of the colonial army in 1921 was 1,320 officers and 36,114 men.

Navy.—There is a colonial navy consisting of 22 small vessels, with 173 Europeans and 811 natives. The Netherlands navy maintains in the colony 30 vessels with a personnel of 229 officers and 1,215 European and 1,441 native non-commissioned officers and men. The expenditure in 1922 for both land and sea armament was 156,000,000 guilders.

Finance.—In 1922 the revenue of the colony was 734,491,841 guilders and the expenditures 924,717,380 guilders (guilder=40 cents). The revenue is derived from taxes on houses and lands, the government monopolies of salt, pawnshops and opium, railways and a number of indirect taxes. The public debt at the beginning of 1922 was 446,868,584 guilders.

Agriculture.—The greater part of the soil is government property and the bulk of the people are agricultural laborers. In 1920 rice was planted to 7,964,000 acres, Indian corn to 4,885,000 acres, cassava to 2,006,000 acres, soya beans to 401,000 acres, sugarcane to 44,000 acres, tobacco to 242,000 acres, tea to 312,000 acres and capsicum to 84,000 acres in the so-called native "cultures." In the same year a total of 369,213 acres was planted to sugar and yielded 1,577,528 tons of sugar. There were 183 sugar factories in operation. The coffee crop in 1920 was 45,547 tons, or about 22 per cent below the normal level of production. Cinchona was produced the same year to the extent of 10,457,472 kilograms and tobacco to the extent of 31,465,201 kilograms. Tea production in 1920 amounted to 48,110,000 kilograms. Cacao production amounted to 840,745 kilograms.

Other Products.—Tin mines are worked by the government in the Banca district and by private interests in Billiton and Riau. The production in 1920 amounted to 22,560 tons. Mineral oil to the amount of 2,365,320 kilograms was produced the same year. Coal production is on the increase the output in 1920 amounting to 1,055,832 tons.

Commerce.—The foreign trade of the colony in 1920, including government and private trade and both merchandise and specie, amounted to 1,310,823,899 guilders for imports and 2,267,871,729 guilders for exports (guilders=40 cents). Sugar, coffee, tea, cinchona, tobacco, copra and tin are the chief exports.

Communications.—There are both state and private railways with an aggregate length of 3,923 miles. There are about 7,000 miles of government telegraph lines and over 6,000 miles of telegraph cables. There are 1,035 post offices and about 22,565 miles of government telephone lines served by 228 exchanges.

Government.—The administration and executive authority are vested in a governor-general who is assisted by a council of five members who, however, take no share in the executive. Both governor and council members are nominated by the queen. There is also an advisory assembly called the Volksraad, some of the members of which are the appointees of the government and others are elected by the local councils. The governor-general in 1922 was Dr. D. Fock, who was appointed to office 28 September 1920.

DUTCH GUIANA, or SURINAM, a colony of Holland on the north coast of South America situated between the colonies of French Guiana and British Guiana. It has an area of 46,060 square miles and a population in 1921 of 113,181, exclusive of negroes and Indians. The capital, Paramaribo, has a population of 50,560. The governor in 1922 was Baron van Heemstra. The census returns show 9,594 Reformed and Lutheran, 23,927 Moravian Brethren, 19,319 Roman Catholics, 15,431 Mohammedans, 21,500 Hindus and 778 Jews. There are 33 public schools with 4,331 pupils and 44 private schools with 7,457 pupils. A normal school is maintained by the government. The colonial revenue is derived from import, export, and excise taxes, personal imposts and some indirect taxes. In 1921 the local revenue amounted to 6,440,000 guilders, the expenditure to 8,193,000 guilders and the subvention from the home government to 1,753,000 guilders (guilder=40 cents). Sugar, bananas, coffee, rice, Indian corn, rum and molasses are the chief colonial products of the soil while gold and balata are the chief mine products. The sugar crop in 1920 amounted to 23,000,000 pounds, the cacao crop to 3,500,000 pounds, coffee to 3,700,000 pounds, rice to 24,000,000 pounds, corn to 5,000,000 pounds, rum to 175,000 gallons and molasses to 80,000 gallons. The exports of gold in the same year amounted to 458,740 grams valued at 706,561 guilders. Balata was produced to the extent of 900,000 pounds. In 1920 the importations were valued at 13,718,026 guilders and the exports at 7,477,512 guilders. The colony is administered by a governor assisted by a council of five, all of whom are appointed by the Queen of Holland. The governor is vested with executive authority.

DUTCH WEST INDIES. See CURACAO; DUTCH GUIANA.

DYE INDUSTRY. The dye industry of the United States is comparatively new, and occupies a unique position. The best dyes, and far the cheapest dyes, are still made in Germany. During the World War the American industry was built up, and has since been artificially maintained, as the cost of making dyes here is still excessive. We are indebted to the *Color Trade Journal* for the following figures, comparing the cost of American-made dyes with the German product. Eight common dyes have been selected for illustration.

Name of Dye	No. of U. S. mfrs.	U. S. Prices per lb.				Price in Germany 1921-22
		1918	1920	1921	1922	
Alizarine Yel. R.	10	\$0.91	.86	1.20	.80	.33
Orange II.	12	.68	.62	.48	.40	.12
Fast Red A.	12	1.03	1.04	.91	.65	.11
Salicini Blk U.	14	1.62	1.10	.73	.73	.26
Benzo Blue BB.	14	1.37	.88	.59	.40	.16
Direct Deep Bl.						
EW.	14	1.04	1.03	.69	.42	.33
Sulfur Black.	12	.37	.25	.20	.18	.10
Indigo Synthetic.	3	.88	.74	.52	.30	.11

The textile industry is the largest user of dyes. American textile manufacturers are at present using American dyes, except in those in-

stances where the War Trade Board has issued special licenses giving permission to purchase German or other foreign dyes, on the ground that a similar and satisfactory article cannot be had here. The amount imported is moderate, as might be expected with such safeguards. More than half of it comes direct from Germany, a considerable portion from Switzerland, and the rest through England.

This singular condition exists: Germany owes France, France owes us, yet we prefer to make our own dyes at three times the cost of German dyes, and a war board is perpetuated to enforce the condition. This infant industry rest largely on a group of German patents that were taken over by the Alien Property Custodian during the war, and sold for a nominal sum to the Chemical Foundation. This Chemical Foundation seems to have been created for the especial purpose of taking title to these patents; but it has got into hot water. By order of President Harding an investigation was started and on 8 September suit was instituted to compel the return of all former German patents to the Alien Property Custodian. It appears that the Chemical Foundation has lost money.

The American dye industry was encouraged in 1920 by the development of a fair export trade, selling to the Far East, Canada, etc. In 1921 and 1922 this export trade sunk away, owing to the appearance of the much lower-priced German dyes, usually of better quality. The arguments advanced for maintaining and farther developing the American dye industry is that dye-making plants are fitted for turning out poison gas in wartime; and while we are officially against poison gas, and do not mean to have another war, it is best to be prepared. For dye export statistics see CHEMICALS, sub-section, EXPORTS.

There are 145 concerns in the United States manufacturing dyestuffs and natural extracts; they are capitalized at \$39,000,000, and pay Federal taxes of about \$2,000,000, plus \$333,000 State taxes. In the census year of 1919 they purchased \$33,000,000 of materials, and produced \$54,000,000 worth of goods. The dyeing and finishing of textiles may also properly be classed as a part of the dye industry. There are 629 establishments in the United States, capitalized at \$230,000,000, giving occupation to 73,000 people. They pay \$10,000,000 Federal taxes and \$3,400,000 State taxes. In the census year their materials cost \$164,000,000 and their production was valued at \$324,000,000.

Indigo is still the dyestuff of largest use; it is successfully produced synthetically. A vast amount of money has been expended in the endeavor to produce chemical combinations of definite fast color. Of the nearly 5,000 German patents that have been so much discussed, less than 250 were commercially useful, as measured by the fact of paying royalties; and two-thirds of the royalties paid on German patents here have been credited to only 31 patents.

German Reparation Dyestuff Deliveries.—

Contrary to the popular conception that German reparation deliveries of dyestuffs have

been made in large proportion since the London schedule of payments, a study of the records by the western European division of the Department of Commerce shows that the major deliveries were made during the months following the Armistice, in the first efforts of Germany to meet the requirements of the Versailles Treaty. The London schedule of payments became effective on 1 May 1921. The deliveries made previous to that date totaled 32,476,000 gold marks in value; from 1 May 1921, to 30 June 1922, dyestuffs were delivered to the value of 10,705,000 gold marks. Distribution of the deliveries made previous to 1 May 1921, was as follows:

	Gold Marks
France.....	9,251,000
Italy.....	9,124,000
British Empire.....	8,499,000
Belgium.....	2,949,000
Japan.....	2,630,000
Serb-Croat-Slovene State.....	23,000
	<hr/> 32,476,000

On 1 May 1921, Germany began deliveries on account of the annuities described in the schedule of payments and dyestuff deliveries are now credited to annuity payments only. From that date to 30 June 1922, they totaled 10,708,000 gold marks distributed as follows:

	Gold Marks
Italy.....	5,589,000
Belgium.....	3,221,000
France.....	2,006,000
British Empire.....	1,696,000
Greece.....	196,000
	<hr/> 10,708,000

Thus during the 31 months previous to the London schedule the deliveries were 75.2 per cent of her total deliveries, leaving 24.8 per cent during the 14 months since that schedule became effective. An interesting fact which appears in the records of deliveries is that the largest deliveries have been to Italy, rather than to France and Belgium as popularly believed. Deliveries to France were 1,000,000 gold marks less than to Italy while those to Belgium were less than half as great as to Italy. The total distribution to 30 June 1922, was as follows:

	Gold Marks	Percentage
Italy.....	12,713,000	29.4
France.....	11,257,000	26.0
British Empire.....	10,195,000	23.6
Belgium.....	6,170,000	14.3
Japan.....	2,630,000	6.1
Greece.....	196,000	.5
Serb-Croat-Slovene State.....	23,000	.1
	<hr/> 43,184,000	<hr/> 100.

The above tables include only the deliveries distributed among the powers. In addition to these, from the beginning of German deliveries to 30 June 1922, dyestuffs to the value of 4,000,000 gold marks, were sold through the Reparation Commission to the textile alliance of the United States and others to the value of 3,000,000 gold marks were resold to German buyers. These sums were credited as cash received rather than as deliveries in kind.

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EAST AFRICA PROTECTORATE. See KENYA COLONY.

EBARA, Soroku, Japanese educator: b. Numazu, Japan, in 1842; d. 20 May 1922. First he was a military officer; in 1870, secretary of the prefecture of Shizuoka; member of the House of Peers after 1902; and sat several times in the house representing Tokio. Ebara was a leader of the Seiyu-kai, director of the Azibu Middle School, and a devout Christian. He was a founder of and chairman of the Young Men's Christian Association in Tokio.

ECUOLOGY. See BOTANY.

ECUADOR, a republic of South America, bounded north by Colombia, south by Peru, east by Peru and west by the Pacific Ocean. The actual boundary lines are in dispute but commissions are engaged in settling frontier differences with the neighbor states. The area is given variously from 116,000 square miles to 276,000 square miles. The republic is divided into seventeen provinces and one territory. The majority of the people are of Indian blood and there are about 400,000 of mixed or mestizo blood. The provinces of the republic, with their capitals and populations, are as follows:

PROVINCES	Capitals	Population
Azuay.....	Cuenca.....	132,400
Bolivar.....	Guaranda.....	43,000
Canar.....	Azogues.....	64,000
Carchi.....	Tulcan.....	36,000
Chimborazo.....	Riobamba.....	122,000
Esmeraldas.....	Esmeraldas.....	14,600
Colon (Galapagos Is.).....	San Christobal.....	400
Guayas.....	Guayaquil.....	150,000
Imbabura.....	Ibarra.....	68,000
Leon.....	Latacunga.....	109,600
Loja.....	Loja.....	66,000
Manabi.....	Puertoviejo.....	64,100
Napo-Pastaza.....	.....	80,000
Santiago-Zamora.....	.....	32,600
Oro.....	Machala.....	205,000
Pichincha.....	Quito.....	32,800
Los Rios.....	Babahoyo.....	103,000
Tungurahua.....	Ambato.....	.....
Total.....		1,323,590

The figures given above are from the census taken nearly 20 years ago and there having been no enumeration since it is only possible to give estimates of the population at the present time. Conservative estimates place the present population at 2,000,000. Quito is the capital and has a population of 70,000. Other cities are Guayaquil with 93,851; Cuenca with 30,000; Riobamba with 12,000; and Ambato with 10,000 people. Vital statistics show a normal increase of population of 30,000 yearly.

Religion.—There is granted full freedom of worship to all denominations. The Catholic is the prevailing form of religious faith and its income is provided in the state estimates. There are six bishops and one archbishop, all of whom

must be citizens of Ecuador. Civil marriage is obligatory since 1902.

Education.—Primary education is free and compulsory. In 1921 there were 1,716 schools, of which 1,395 were government schools, 182 municipal schools and 139 private schools, with a total attendance of 103,344 and a teaching staff of 2,438. There are three universities, those of Quito, Guayas and Azuay with the usual faculties. There is a law school at Loja.

Agriculture.—There are two agricultural zones in the republic, tropical farming in the coastal lowlands and the temperate zone of the highlands where cattle raising, dairying and wheat growing are the chief farming activities. Cocoa, coffee and rubber are important crops; cocoa being a staple. The annual production of cocoa beans is about 4,000,000 pounds. Coffee exports average an equal amount. Rubber exports amount to about 1,000,000 pounds. The rubber industry is on the decline because of the destructive methods used in gathering the gum. Tagua nuts are gathered in large quantities. Sugar growing is on the increase. Mangrove bark for tanning is exported.

Mining.—Gold has been found in many places and silver was worked for many years but no mines are now in operation. Oil wells are being developed by British companies. Copper, iron, lead and coal are also found in considerably rich veins but mining has not yet reached a high stage of development.

Industry.—The timber industry is flourishing there being vast forests throughout the republic containing dyewoods, cinchona trees and other high grade woods. So-called 'Panama' hats are made almost entirely in Ecuador, there being very little competition except from Peru. Flour mills, sugar refineries, chocolate works and breweries furnish most of the industrial employment apart from hat-making and the timber industry as above noted.

Commerce.—Ecuadorian exports for the year 1920 were valued at \$24,665,650 and the imports at \$21,122,678. The chief exports were cocoa, tagua or ivory nuts, hats, coffee, hides and rubber. The chief imports were textiles, foodstuffs and machinery. The United States furnished most of the imports. Of the exports nearly two-thirds of the value was represented by cocoa and over \$2,000,000 by tagua or ivory nuts now so extensively used in the manufacture of buttons. In reviewing the situation at the close of 1922, the United States Department of Commerce reported that, despite unusually large crops in 1922, produce was being sold at higher prices, the average increase being about 15 per cent over the prices of Ecuadorian products on the last day of 1922 were: Cacao, 1,630,825 pounds; cinchona bark, 35,000 pounds; coffee, 400,000 pounds; cotton, 1,400,000 pounds; hides, 75,000 pounds; kapok, 60,000 pounds.

Communications.—There are over 200 miles

of navigable waterways in the republic over the rivers Guayas, Daule and their tributary streams. Over these about 40 steam vessels ply regularly and there are many gasoline launches and lesser craft. A railway from Duran opposite Guayaquil connects that port with Quito, the capital, 280 miles in length. The total length of railways in the republic is 413 miles. There are about 5,000 miles of telegraph lines and 200 stations. There are about 3,000 miles of telephone lines with about 3,000 subscribers of whom three-fourths are in Guayaquil. There are three wireless stations in operation and 230 post-offices. Guayaquil has steamship communication with Europe and with the United States. In 1920 there entered at this port 241 vessels of an aggregate tonnage of 451,753.

Banking and Finance.—The coin of the republic is minted abroad, there being no mint in the country. There are five banks of issue which have in circulation an aggregate of \$8,000,000, of which all but about \$500,000 was secured by reserve funds of gold and silver specie. The revenue of the country in 1921 was \$10,050,000 balanced by an expenditure of an equal amount. Of the revenue about 70 per cent is derived from customs dues and 15 per cent from the taxes on cocoa, tobacco and rum. The foreign debt of the republic amounts to \$17,000,000 and the internal debt to \$13,300,000.

Army and Navy.—The regular army has 600 officers and 4,500 men. Military service is compulsory since 1921. There are six military districts with a military training school at the capital. The navy consists of three vessels, two gun boats and an old destroyer.

Government.—The executive power is vested in a President who is elected for a term of four years. The legislative functions are delegated to a bicameral Congress. The Senate has 32 members chosen for four years while the Assembly has 48 members chosen for two years. The Congress meets annually on 10 August in regular session. The suffrage is possessed by all adults who are able to read and write. The constitution definitely bans all privileges of rank and race and since 1918 peonage has been abolished. Indians no longer pay tribute and are admitted to citizenship. The provinces are ruled by governors appointed by the central government. The President of the Republic is assisted in his executive functions by a cabinet of five ministers with the usual portfolios of Interior, Public Instruction, Foreign Affairs, Finance and War. The President in 1922 was Dr. Jose Luis Tamayo, whose term of office runs from 1 September 1920 to 31 August 1924. His salary is 24,000 sucres a year (about \$12,000).

History.—Under the presidency of Dr. Luis Tamayo, Ecuador continued with the Liberal party in power in unbroken succession since 1895. The peace inaugurated in 1916 remained uninterrupted; and the government maintained its policy of retrenchments meeting all expenses without recourse to foreign loans. During the year 1922 efforts were made to introduce sanitation into the hot-country lands and to place Guayaquil, the chief port of the nation, in as healthful a condition as the ports of other tropical countries. The harbor was deepened,

the river mouth dredged and yellow fever completely driven out. The two important lines of railway between Esmeralda and Quito and Guayaquil and La Playa, on the coast, respectively, were pushed ahead steadily so that they were nearing completion by the end of 1922. The declared policy of the Tamayo government, of encouraging immigration brought thousands of immigrants, principally Italians, Germans, Spaniards and Swiss, into Ecuador in 1922, most of them to settle on the free land given them by the government. Many of these immigrants were furnished with working animals, farming implements and seed. Numerous land and colonization companies contributed to increase the constant stream of immigration during 1922. One of the largest and most active of these was organized with Chilean capital and a board of directors. To handle the increased coast and trans-Pacific business of Ecuador steamship lines were strengthened, especially those plying between United States ports and Guayaquil and between the latter and Italian ports, from which immigration was heavy.

Ecuador continued to extend and strengthen her commercial relations with England and France during 1922 because of old commercial traditions which have always exercised strong influence in the Pacific-coast countries of South America. Conditions of exchange also favored these latter countries; and the sanitation of the Ecuadorian ports and coast country contributed to increase the trans-oceanic and coast trade. After considerable diplomatic correspondence, Ecuador finally re-established consular and other relations with Germany by decree of 18 May 1922. This contributed to the extension of the commercial relations of the country with the German republic and was largely instrumental in attracting German settlers to Ecuador in increasing numbers throughout the year 1922. The favorable condition of exchange and the demand of agricultural products also contributed to the development of agriculture, apart from that induced by the increased immigration. The crisis through which the country had been passing, which was largely one of exchange with foreign countries, and the after effects of the World War continued gradually disappearing, with the consequent improvement of business conditions. The free press, which the Tamayo government has continued to strenuously support, helped, during the past year, to educate the people of Ecuador to a better appreciation of free institutions and liberal democracy. Confidence in the banking institutions of the country, both commercial and state, continued steadily increasing, in 1922, though the banks continued their policy of limiting credit and demanding what, in the United States and European countries, would be considered excessively heavy interest. This gave rise to a very extensive lending business with private money lenders at high rates of interest; and this, in its turn, forced merchants and other business men generally to sell goods at a comparatively high margin above cost, thus tending to retard the financial and commercial rehabilitation of Ecuador. But business, though thus seriously handicapped, continued to steadily improve; and with this improvement, public confidence steadily increased. The 18 accredited banks of the country raised their combined capi-

tal and other resources, during 1922, to over \$120,000,000.

A commission appointed by the Belgian government visited Ecuador in May 1922, for the purpose of promoting commercial relations between Belgium and Ecuador. It visited all important commercial and industrial centres as guests of the government, which furnished facilities for the study of such phases of the national life as interested the visitors. The report made by the commission to the Belgian government was instrumental in augmenting immigration from Belgium to Ecuador, with the promise of largely increased immigration during 1923. In 1922 Ecuador celebrated the 100th anniversary of her national independence, which all Ecuadorians believe was won by General Sucre at the battle of Pichincha, 24 May 1822. The other countries especially interested in this event, Colombia and Bolivia, associated themselves with Ecuador, in this celebration which assumed a decidedly official character.

EDUCATION ASSOCIATION OF THE UNITED STATES, National, a voluntary organization of persons actively engaged in educational work and others interested in education. Its purpose and object is to elevate the character of the teaching profession, advance the interests of the profession, and promote the cause of education in the United States. It was organized in Philadelphia, 26 Aug. 1857, under the name of The National Teachers' Association. In 1870 the American Normal Association and the National Superintendents' Association united with it to form the National Educational Association. It was incorporated under the laws of the District of Columbia, 24 Feb. 1886, and by a special act of Congress, which was approved 30 June 1906, it was incorporated under the name of The National Education Association of the United States. The charter was accepted and by-laws were adopted at the 50th anniversary convention held 10 July 1907 at Los Angeles, Calif. This organization, which is now the largest teachers' organization in the world, until 1918 had an active membership of less than 10,000. On 1 Jan. 1923, the enrollment was 115,000. With the rapid growth in membership it was found necessary to work out new methods for the conduct of its business. At the annual meeting in July 1920, in Salt Lake City, a reorganization plan was adopted, the chief features of which may be summarized as follows: The business of the association is transacted by a representative assembly which is composed of delegates from State and local associations. Any State or local teachers' association may affiliate and thereby become a unit in the National association. The basis of representation of an affiliated State association in the representative assembly is one delegate for each 100 of its members or major fraction thereof, who are active members of the National association up to 500 of such members and thereafter one delegate for each 500 members or major fraction thereof. Affiliated State associations are assessed annual dues of \$10 for each delegate to which such association is entitled, the maximum dues being \$100. The basis of representation of an affiliated local association in the representative assembly is one delegate for each 100 members

or major fraction thereof, who are members of the National association. An association must have, therefore, at least 51 members in the National association in order to be entitled to a delegate. The annual dues of each affiliated local association to the National association are \$5. All delegates, both State and local, have equal rights and privileges in the assembly and each has one vote. The National association continues to enroll individual members.

The most important yearly event of the association is the annual meeting held the first week in July. This meeting serves as a clearing-house for educational ideas, reviews the progress of the year in education, and furnishes inspiration for the coming year to thousands who attend. In connection with this summer meeting the departments of the association, of which there are 22, and a number of allied organizations hold meetings for the discussion of various phases of education. The department of superintendence holds an annual meeting the last week of February. The first meeting of the reorganized association was held at Des Moines, July 1921. The second meeting of the reorganized association, which was its 60th annual meeting, was held at Boston, 2-8 July 1922, Charl Ormond Williams of Memphis, Tenn., presiding. It was attended by 900 accredited delegates, representing 47 States, three Territories, the District of Columbia, and several hundred local associations. The total attendance was 12,000. The program was built on the general theme "Education and the Democratic Awakening." Great emphasis was placed on the subject of rural education, one day being given over entirely to the study of rural problems. In addition to the representative assembly the business and work of the association are transacted through a board of directors, an executive committee, a board of trustees, departmental organizations, standing and special committees, and a staff at headquarters. The association has 24 active committees, each carrying on a special line of investigation. Several of the larger committees are the legislative commission, illiteracy commission, commission for the co-ordination of research agencies, commission for reorganization of secondary education and the commission for reorganization of elementary education. The two last named groups are thoroughly investigating the school curriculum, while others are working on problems of foreign relations, rural education, visual education, thrift, sources of revenue, salaries, tenure, pensions, high-school libraries, health, financing of delegates, and standardization of schoolhouse planning; several committees are co-operating with other national organizations.

The annual dues of active and associate members are \$2, which includes a subscription to the association's *Journal* and entitles a member to all privileges of the association. Five-dollar memberships may be taken out by those desiring not only the *Journal* but the annual volume of 'Addresses and Proceedings' and other regular publications of the association. The membership year is the same as the fiscal year which extends from 1 June to 31 May, inclusive. Active memberships for life may be taken out upon the payment of \$100, the income derived from this source being placed in the permanent fund. The

finances of the association are embodied in two funds. The current fund is derived from membership fees, advertising in the association's *Journal*, commercial exhibits, interest on the permanent fund, and the sale of publications. The permanent fund of the association is invested in securities and the headquarters' property. The total receipts of the association for the fiscal year ending 31 May 1922, were \$228,832; and the total expenditures were \$209,357. The amount in the permanent fund on that date was \$197,456.

Until 1917 headquarters were maintained at the place where the secretary resided; in 1917 they were established at 1400 Massachusetts Avenue, Washington, D. C. In August 1920, the property at 1201 Sixteenth Street, Northwest, became the permanent home of the association. Since 1898 the association has employed a paid secretary. The present secretary, elected by the board of trustees for four years, has general supervision over the work at headquarters. He and his executive staff are held responsible for the carrying out of decisions and policies of the governing bodies of the association. There are six well-organized divisions in the headquarters' staff, each under the leadership of a director. These divisions are records and accounts, established in 1917; field work, established in 1918; business, established in 1919; publications, established in 1920; research, established in 1922; and elementary school service, established in 1922. The department of superintendence since August 1922, has employed a full-time secretary and has maintained an office at headquarters.

One of the association's outstanding achievements of the past two years is the establishment and development of its monthly *Journal* which is now recognized as one of the foremost authorities on educational progress not only in the United States but in the entire world. The *Journal* has grown from a publication of 20 pages in January 1920, the date of the first number, to one of 68 pages, January 1923. The *Journal* not only vigorously supports the policies and programs of the association but aims to reflect the growing activities of professional organizations, national, state, and local, in such a way that their programs shall appeal to the great body of educational workers throughout the nation. It also gives special consideration to new movements in education and to matters of national and international concern. Besides the *Journal* the association publishes an annual volume of proceedings and numerous reports and bulletins on educational subjects.

Because of the great demand by educators of the country for current information on such problems as school finance, sources of revenue, budget statistics, and teacher problems, including salaries, training, tenure and pensions, a research division was established in March 1922. The director of this division, a recognized expert in research, collaborates with other research agencies of the country, conducts investigations in the field of education, and issues information of distinctive current value through correspondence and bulletins. The division of elementary school service, established in September 1922, keeps in touch with the local affiliated associa-

tions assisting them in co-operating with the national association and gives personal attention to requests of any kind that are received from classroom teachers throughout the country. One of the leading activities of the association during the past four years has been its legislative program. It is now concentrating its efforts on the passage of the Towner-Sterling bill which provides (1) for a department of education with a secretary in the President's cabinet; (2) for a national council of education composed of the 48 chief State school executives, 25 experts in special fields of education, and 25 lay members; and (3) for Federal aid to encourage the State in (a) removal of illiteracy, (b) Americanization of foreign born, (c) promotion of physical education, (d) equalization of educational opportunities, and (e) training of teachers. In the sponsorship of this measure the association has the support of leading national, civic, and patriotic organizations. The association has its headquarters at 1201 16th Street, N. W., Washington, D. C. The officers for 1922-23 are: President, William B. Owen, Chicago Normal College, Chicago, Ill.; secretary, J. W. Crabtree, 1201 16th Street, N. W., Washington, D. C.; and treasurer, Cornelia S. Adair, Richmond, Va.

AGNES S. WINN,

Director, Elementary School Service Division.

EDUCATION, Home. To meet the demands of adults for help in furthering their own education, the United States Bureau of Education has instituted home reading courses with respect to which information is available upon demand. These courses, 22 in number, cover a wide range of subjects, such as literature, biography, history, fiction, foreign trade, teaching, etc. Thousands of adults, it is announced, have availed themselves of the opportunity to improve themselves. Many, upon completion of courses, have received certificates issued by the Bureau of Education and signed by the Commissioner of Education. Sixteen State universities assist the Federal Bureau of Education in giving this free service. They are the universities of Arizona, Arkansas, Colorado, Indiana, Iowa, Kentucky, Louisiana, North Carolina, North Dakota, Oregon, South Carolina, South Dakota, Utah, Virginia, Washington and Wisconsin.

EDUCATION, International Institute of. See PEACE AND ARBITRATION, INTERNATIONAL.

EDUCATION, Progress in. Public education has assumed a status of national importance. The stimulating influence of the National Education Association and the program which this organization has sponsored are largely responsible for the national spirit which has been developed in public education.

The discussion of the provisions of the Towner-Sterling bill at not only local, state, and national educational gatherings but also at such national meetings as the Federation of Women's Clubs, the Daughters of the American Revolution, the League of Women Voters, the Parent-Teacher Association, the American Federation of Labor, and other important meetings has not only revealed the limited educational facilities provided for the children of many sections of the country but has also re-

sulted in a clear understanding of the responsibility which the nation possesses in the education and training of all future citizens.

The sentiment of the country is undoubtedly reflected in the serious consideration given by the President of the United States and his Cabinet to the subject of education, and the plans of the commission for reorganizing the administration of the official affairs of the government. The President has announced that the report of the Cabinet to the commission will contain a recommendation for a Department of Education and Welfare.

A decisive movement has been inaugurated in every section of the country to equalize educational opportunity and thus afford the youth of America the facilities to obtain that education and training which shall qualify them for service — for citizenship in a great democracy. This movement is generally called "democratizing education." It is shown by an increase in the length of the compulsory school period, as well as in the length of the school year, by more rigid enforcement of the compulsory attendance laws, by an enrichment and an enlargement of the school curriculum, by an increase in the State appropriations and a more equitable distribution of State funds, by the consolidation of schools, by more thorough and scientific supervision of instruction, and by an advancement in the social status, the scholarship, and professional training of teachers.

A recent survey of the entire country by the secretary of the National Education Association revealed a more wholesome respect for compulsory attendance statutes. Every State in the Union appears to be making substantial gains in the enrollment of children and in the average daily attendance. In some States the increase has been phenomenal. The tendency is to make the compulsory school period include all children between the ages of 6 and 16 years. There is also a general trend toward increasing the legal period of time during which school must be in session. Those States that have hitherto been maintaining school for a shorter period of time than the average term for the country have increased their school year from one to four weeks. This is especially true in relation to the term for rural schools. There is developing, throughout the entire country, a strong current of public opinion for making the term in rural schools equal in length to the term maintained in cities. This movement will ultimately mean a uniform term of 10 months.

In the field of general education this effort to democratize education is reflected best in the phenomenal development of the junior high school movement; and in the field of vocational education, in the unprecedented growth in vocational, agricultural, commercial, home economics and industrial education that has taken place throughout the country during the past year. There is a pronounced tendency, in other words, to adapt the curriculum, in so far as may be possible, to the varying needs of individuals and to make available the types of education that will meet the desires of the greatest possible number of persons by giving due recognition to their individual differences in native

physical and mental capacities, and in aims and ambitions in life.

An important development in industrial arts education during the current year has been the idea of the "general shop." This is the term that is used to designate a single shop of ordinary classroom size, or preferably somewhat larger, in which are housed a number of types of industrial activity. For example, the shop may contain equipment that will enable five boys to participate in each of four kinds of work such as printing, woodworking, electrical work, and metal work. A class of 20 boys may thus be taught by one teacher in a single shop, and by rotation, in four important forms of industrial activity.

One of the most significant and hopeful developments of the year in the field of vocational industrial education has been brought about by means of conferences of several kinds and through reports of a number of persons as well as by public and private organizations who are striving to establish mutually helpful working relations between the schools and industry. School people in several States have taken the initiative in demonstrating that the public schools can be of distinct service in furthering trade and industrial training to employed persons. It has long been recognized that the schools as well as industry have a responsibility for assisting in apprenticeship training, but during the last year there has been a general agreement that one of the first and most effective ways in which this may be brought about is by first reaching the foremen that have instructional responsibilities in order that they may be equipped to give, in turn, effective, well-organized instruction to apprentices and others in need of job training.

In the field of vocational agriculture, during the past year there has been the tendency to measure the extent to which the teaching of vocational agriculture is functioning in making more and better farmers. Data from the nation at large shows that more than 55 per cent of the boys who have taken vocational courses in agriculture are now engaged in gainful agricultural occupations. Evidence is also at hand that indicates improvements in agricultural practices and increases in agricultural production because of instruction in vocational agriculture.

Music is gaining an increasingly large place in all public school curriculums. It has been made a required subject in every school maintained in the States of California and of Pennsylvania. In the latter State, under the direction of the State school authorities, a music week has been permanently established and is observed by the schools, colleges, churches, civic organizations, and the commercial, industrial and mercantile establishments in every city and school district in the State.

The funds appropriated by State legislatures for the support of public schools have been greatly increased. Notable increases have been provided in New York, Pennsylvania, Delaware, Florida, Louisiana, Maine, Maryland, Massachusetts, North Carolina, Tennessee, Virginia and West Virginia. The method of the distribution of such funds adopted by the States has been upon a basis intended to give the greatest

aid to those communities which are the least able to bear the burden of taxation necessary to provide good schools.

The movement for the consolidation of schools has made great advancement. The States in the South and those in the West are generally leading the States in the East. Many States are endeavoring to stimulate an interest in this work through financial aid. Provision has been made in some States for paying part of the cost of transportation. In other States aid is extended toward the construction of new buildings and increased aid is often provided on a more generous plan to a consolidated school than that given to a single school. The building of good roads facilitates the consolidation of schools. The development of consolidated schools during the past year has been pronounced in Mississippi, Louisiana and Pennsylvania.

Decided progress has been made during the past year in the supervision of instruction. This is especially the case in rural schools. California has employed 100 rural school supervisors. These supervisors are not associated with administrative supervision but with instructional supervision. State superintendent Harris, of Louisiana, in co-operation with city and county superintendents, has inaugurated an effective system of this type of supervision. These supervisors are persons of sound liberal scholarship who have been students of children and of methods of instruction. The methods under which this plan has been adopted have developed co-operation between all the school forces, created a fine professional spirit, and stimulated teachers. Demonstration centers have been adopted which have been substituted for the traditional teachers' institute. Many supervisors have been employed in the State.

The legislatures of Kentucky, North Carolina and Pennsylvania made largely increased appropriations to the State Departments of Education in these respective States for the organization of a professional staff to give intelligent direction and supervision to the schools of these States. The subject of instructional supervision has been discussed in all parts of the country and it may be said that there is a decided trend in favor of scientific supervision of instruction. School boards are generally showing a greater appreciation of this service.

School authorities in all parts of the country have placed increased emphasis upon the qualifications of teachers. The general tendency has been to set as a minimum standard for all schools those standards which progressive cities have adopted in recent years. Some States, as Pennsylvania for instance, have written into their school codes a provision to the effect that no teacher shall be employed in any school in the State after 1 Sept. 1927, who has not been graduated from a four-year approved high school and, thereafter, from a two-year professional course in a State normal school or college.

Advanced standards have been set for admission to State normal schools and the professional courses in these institutions modernized in many of the States. A strong move-

ment is also developing throughout the country to increase the length of the professional courses in State normal schools from two to three or four years, to change the names of these institutions to colleges, and to confer upon them authority to grant degrees. There has been a phenomenal increase in the number of students in attendance upon the education courses given in the colleges and universities of the country. In the State of Louisiana 5,000 out of 8,000 white teachers are college or normal school graduates.

There is a nation-wide movement for the improvement of the teachers in service. This movement is also traceable to the influence of the National Education Association which adopted the slogan a few years ago "A trained teacher for every classroom in America." The campaign of this organization to improve and professionalize the teaching force of the country is bearing fruit. There are two agencies exerting a powerful influence in this movement. These are vacation courses given in summer schools and extension courses given during the school year. Nearly all the influential colleges and universities of the country and the State normal schools are giving summer courses for teachers. The number of teachers attending these sessions in 1922 exceeded by many thousands the number in attendance during any previous year. In North Carolina, 12,500 of the 19,540 teachers of the State attended summer schools; in Oklahoma, 13,000 out of 17,000 attended summer schools, and in Pennsylvania 25,000 out of 45,000 teachers were in attendance upon summer courses. In these States and in others the session covered nine weeks. The extent of this movement has been general, and most successful in the Southern States.

Many teachers are also taking extension courses during the year. These courses are given by professors on the faculties of normal schools, colleges, and universities. These professors go out into the communities accessible to their institutions two or three times per week and give instruction to classes which they organize from the surrounding country. In Pennsylvania 22,000 teachers in service were registered in these classes during 1922.

The improved social status of the teacher accounts in part for this stimulation of the teachers of the country. Teaching is gradually being recognized as a profession. The teacher has a better social standing in the community and generally enjoys tenure during efficient service. Retirement laws providing for annuities have been enacted in many States. Salary schedules have been enacted into laws which provide more adequate compensation and therefore attract a better type of teacher into the service. Furthermore, the decided trend in all parts of the country to grant teachers a larger participation in the formulation of general school policies has given a decided professional status to the teacher. The establishment of codes of ethics by the voluntary action of teachers in many parts of the country is a significant indication of the enlarged outlook which teachers possess of the importance of their work and of its development into a real profession. Any action which gives standing

and dignity to the individual members of the profession will tend to attract men and women of strong mental and moral fibre into this important field of public service.

The National Education Association, through its Committee on Foreign Relations, inaugurated a movement during the past year for a world conference on education in connection with the annual meeting of that Association which will be held at Oakland, Cal., in July 1923. It is believed that the leaders of the educational systems of the important nations of the world may become a potential factor in the development of "a new order of international friendship, justice and good will." The main objectives of the conference are stated as follows: (1) To promote peace and good will among the nations of the world. (2) To bring about a world-wide tolerance of the rights and privileges of all nations.

It is believed that these great ends may be attained through proper instruction of the youth of each nation. The schoolmaster has started out to accomplish what the statesman has been unable to achieve.

It is further proposed to organize at this conference an International Education Association and, through the co-operative spirit of such Association, to federate the influence of several effective international, social, economic, educational and religious organizations and make them a powerful agency in developing a bond of common brotherhood among the men of the civilized nations of the world.

Educational measurements and mental tests have received great attention, made notable progress and gained much public confidence during the past year. This is true in public schools as well as in colleges and universities. These agencies have not supplanted other essential factors in public school administration but they have been made a supplemental and confirming agency to such factors. Probably no event in educational circles during the year has provoked more wholesome and sound discussion than the able and thoughtful address of Dr. William C. Bagley on "Educational Determination: or Democracy and the I. Q." This stimulating address raised several important issues in regard to the proper function and limitations of educational tests and measurements which are both timely and pertinent. There have been many excessive claims and ill-considered conclusions in regard to this rapidly developing field of educational research and practice. Doctor Bagley's scholarly and masterly treatment of the subject is opportune and courageous. It properly challenges the proponents of educational measurements to establish by sound evidence the position which these agencies are entitled to hold in modern, scientific educational procedure. His contribution to this problem has served not only the desirable end of checking the indiscriminate "testing" which has been carried on by those who have had no training in this field and have no understanding or conception of the aims or objectives of such procedure, but has also brought squarely before the school administrators the desirability of giving this practice a fair trial under competent and skilled men.

A legitimate and wide field of usefulness for educational tests and measurements is, however,

being rapidly established by the experimental work of many able investigators who are interested in a more effective adaptation of the educational process to the individual needs and capacities of the girls and boys of our schools.

Accepted and established educational policies are often the products of tradition or accident. More and more they are being made the subjects of careful study, to the end that they may be either confirmed or revised.

Certain recent laboratory investigations of reading may serve as a type of the scientific study of educational problems. By photographic processes, the number and length of the pauses a reader makes in reading a line of printed matter are determined. It is established that competent readers see more at a glance than do poor readers; that there is a marked difference between oral and silent reading. It is made quite evident that, in the upper grades, the school ought not to emphasize oral reading, which is a slow, clumsy form of reading, when the pupils ought to be cultivating the power of rapid silent reading. By means of investigations of this kind, each of the subjects of instruction is being examined, and as a result school work is becoming increasingly effective in cultivating children's intellectual powers.

Studies of individual differences in pupils; sex differences; the periodicity in the pupil's development; the measurements of the outcome of instruction, and the developments of standardized tests and measures; curriculum-organization; planning of buildings; supervision and administration — all these — demand and are now receiving patient, detailed scientific study.

This character of scientific investigation has received pronounced attention during the past year. Some of the notable movements in this field have been the investigations in reading made by the University of Chicago under the financial support of the Commonwealth Fund, the studies in Latin subsidized by the General Education Board and conducted under the leadership of Mason D. Gray, and similar investigations in the field of high school subjects by A. J. Inglis of Harvard University.

The guidance movement, starting mainly with vocational guidance, has expanded to take in numerous other kinds of guidance. The choice of curriculum, health, worthy use of leisure, character and other objectives of education are included as having their bearing on a vocation. Its narrowest conception, the guidance of pupils into occupations, has widened to include school preparation for a life work which goes far into the field of general education.

Because so much of the service of vocational counselors has been in the field of curriculum guidance and social counseling, it is being recognized that a more inclusive term must be used. The term "educational guidance" and "vocational guidance" are giving way to "guidance."

The trend in guidance service during the past year has had a decided tendency toward a greater co-operation of teachers and those in charge of compulsory attendance, health, tests and measurements, and with employing interests and social agencies of the community.

The National Vocational Guidance Association, the United States Child Labor Bureau, the United States Junior Employment Service, and

many of the larger school systems have been making important strides in the guidance movement. Notably among the latter are Pittsburgh, Chicago, Boston, Seattle, and Cincinnati.

Safe and more sanitary school buildings, with better facilities for health activities such as gymnasiums, swimming pools, nurses' and doctors' rooms, rest rooms for teachers, and facilities for hot lunch for both pupils and teachers, are being built. Larger playgrounds are being provided.

Physical education is broadening in scope and time allotment. Physical efficiency tests and mass competitions designed to reach all pupils are more emphasized. Inter-scholastic competition is being based on physical activities for the whole student body, and is under better control.

Physiology is becoming a real health training and instruction through habit building, based on information regarding cleanliness, rest, sleep, fresh air, proper food, good posture, and control of communicable disease; ideals of health and physical efficiency, and the establishment of individual and community healthful attitudes.

Medical inspection is developing into a real health supervision, including the activities not only of school physicians, but those of nurses, dentists, dental hygienists, teachers, school clinics, and special classes for the care of the physically handicapped. The health of teachers is being conserved through better facilities, environment, program arrangement, and increased salaries. It is now realized that all these factors must work together as a real school health program.

No question in the field of public education has received more careful and scientific consideration during the past year than that relating to the financing of educational enterprises. In all parts of the country there has been much criticism of progressive public school programs and of the increased expenditures not only for the maintenance of such programs but for the support of colleges and universities as well. In many sections of the country organized movements were promoted to curtail such programs in order to reduce expenditures for education. Notwithstanding all the activities of the reactionary forces of the country in relation to educational affairs, the year has been one of substantial progress. Very generally the advances made in increased salaries for teachers, in the development of more adequate school plants, in the broadening and expansion of courses of study, in the organization of better rural schools, and in the efforts generally to equalize educational opportunity have not only been held but additional gains have been made. The expenditures for public school maintenance, for the construction of new buildings, and for the support of colleges and universities have exceeded those of any previous year in the history of the nation. More important than this, however, has been the support which men of large affairs have given to the financial necessities of education and the support which the influential press of the country has also given to the needs of public education.

One of the outstanding features of educational interest during the year has been the "Finance Inquiry" into the cost of public edu-

cation supported by the leading foundations in education, sponsored by the American Council of Education and conducted under the direction of Dr. George D. Strayer of Teachers' College, Columbia University.

With the extraordinary increase in the number seeking admission to institutions of higher learning, it has become increasingly necessary to restrict the size of the groups admitted, and to devise means for selecting the applicants of greater ability. The discovery and encouragement of students of superior ability and of promise of achievement in research is a project recently inaugurated by the National Research Council.

As an outcome of the crowded conditions of the colleges and universities, there has recently been an increase in the number of junior colleges. More of these schools will probably be established, particularly in the cities, and as the result of reorganization of the weaker four-year colleges.

As the result of recognition that undergraduate institutions are founded and maintained as teaching, rather than research institutions, there is coming into prominence an increased emphasis upon the importance of the teaching done in college classes. There is now an insistence that the college instructor must be not only a profound scholar, but also a trained teacher.

The industries of the country are coming to look to the higher institutions of learning for assistance, and will cooperate with them to their own advantage and the advancement of education and progress. The establishment of "Industrial Fellowships" is typical of this development.

Everywhere we note a movement directed toward the establishment of intimate relationship between institutions of higher learning and their communities, through extension courses and the provision of opportunities for students other than those regularly enrolled.

The Hon. John W. Weeks, Secretary of War, invited a number of leading educators in the country to attend a conference at the War Department at Washington in November 1922. The subject under discussion related to the best methods under which Federal and non-Federal agencies could best cooperate in the preparation of the youth of the country for citizenship and national defense.

The theory of the War Department is that the training which develops the character of boys, gives them vigorous bodies, and instills in them proper ideas as to the responsibility and obligations of citizenship, is essential to give them the necessary preparation to become efficient defenders of our country.

It was pointed out by the War Department that the responsibility for national defense before the World War was generally considered to rest solely with the regular army, the navy, and the national guard, but that under the Congressional Act of 1920 reliance for national defense is centered on a citizen army in which the quality of the manhood of the country is a fundamental factor. While national defense is a function of the Federal government, the development of young manhood is a function of the States and of the people. The responsibility,

therefore, for national defense is divided among the Federal government, the States and the people.

The outstanding question under discussion was, therefore, how shall these Federal and non-Federal agencies cooperate in meeting their several responsibilities?

THOMAS E. FINEGAN,
Superintendent of Public Instruction, The Commonwealth of Pennsylvania.

EDUCATION, United States Bureau of. The Federal government maintains no national system of public schools; the establishment, maintenance, and control of such schools and school systems are left to the individual States, but from the inception of the republic, the Federal government has encouraged education in the several States. The necessity of some central office for the collection and study of educational statistics and data was early seen and appreciated by schoolmen. Several attempts were made to establish such an agency, but attempts to interest Congress and the Federal government in a national office of education proved abortive until the National Association of School Superintendents, at their annual meeting in Washington, D. C., 6-8 Feb. 1866, appointed a committee to memorialize Congress on the question. On 14 Feb. 1866, Representative James A. Garfield of Ohio, afterwards President of the United States, presented the memorial to the House of Representatives, together with a bill for the establishment of a department of education on practically the same lines proposed by the school superintendents. The bill was passed by the Congress and was approved by the President 3 March 1867. The department of education was continued as an "independent establishment" until 1 July 1869, when, according to a provision contained in one of the annual appropriation acts, approved 20 July 1868, it was constituted an office or bureau in the Department of the Interior.

The purposes of the Bureau, as set forth in the act establishing it, are "to collect statistics and facts showing the condition and progress of education in the several States and Territories, and to diffuse such information respecting the organization and management of schools and school systems, and methods of teaching, as shall aid the people of the United States in the establishment and maintenance of efficient school systems and otherwise promote the cause of education throughout the country." The Bureau is, therefore, primarily an institution for educational research and promotion. The act creating it gave it no administrative duties and such administrative duties as it possesses were subsequently assigned to it. The most casual investigation shows that some of the States are more successful than others in solving the problems of public education. While some of them, through years of experience and through the consecutive efforts of trained leaders, have accomplished notable achievements in various phases of educational theory and practice, certain other States are seeking the answers to many of the same questions, laboriously and at great expense exploring the ground that has already been carefully charted. Much of this costly duplication of experiment has un-

doubtedly been saved by the Bureau of Education, which has made available to all the States the experiences and achievements of the most progressive and of the most highly endowed, as far as its resources would permit. In an effort to make its service to the country fully effective, the functions of the Bureau have been divided into four parts: field service, research and investigation of special educational problems, educational surveys, and dissemination of information.

Service in the field by representatives of the Bureau includes lectures and addresses upon educational topics before teachers, students, women's clubs, business men's clubs, and other organizations interested in education, conducting and assisting in special conferences for the consideration of educational questions, visiting and conferring with school officers and teachers for the purpose of procuring and imparting information, and participation in educational surveys at the request of the proper local authorities. Educational surveys constitute an important activity of the Bureau. During the fiscal year 1921-22, 41 surveys were made, embracing the State systems of public schools of Arkansas; State systems of higher education of Kansas and Oklahoma; higher educational institutions of Arkansas, Arizona, Oregon, Tennessee, and State College for Women, Greensboro, N. C.; public school systems of Trenton, N. J., Washington, D. C., Shreveport, La., and Sparta, Ga.; school buildings in Parkersburg, W. Va., Washington, N. C., and Greenfield, Ohio; and the system of public schools of Washington County, Va. Some of these were comprehensive studies requiring the services of 20 or more experts for periods of field work varying from four to eight weeks; others were surveys of individual institutions, made by a single representative of the Bureau in one or two days. The recommendations of these surveys have resulted in substantial improvements in the school systems studied. To fulfill its function as a clearing house of information, the Bureau is at all times engaged upon the systematic study of a variety of current problems. The staff is so limited that it is impossible to give full attention to more than a small part of the perplexing questions upon which school authorities seek advice, but in spite of handicaps research work of great extent and variety was done during 1922. The results of the research and survey work have been published by the Bureau as part of its work in the dissemination of information.

The plan of publication of the Bureau of Education includes (1) a biennial survey of education, comprising a complete statistical and textual résumé of educational conditions in the United States, with brief statements of the conditions in the principal foreign countries; (2) an annual report of the operations of the Bureau of Education; (3) bulletins or monographs usually containing comprehensive reports of educational research; (4) leaflets, comprising less extensive reports or discussion of educational movements or occurrences; (5) the periodical, *School Life*, which contains information of important educational events reported as early as practicable. One hundred and sixteen documents of all kinds were published during the year. A limited edition of each of them was

distributed gratuitously, and later editions were sold at the actual cost of printing. The first national program of home education to be adopted by the government of the United States, or in fact, by any national government, was inaugurated by the Bureau in 1913, and to-day the national reading circle includes readers in every State of the Union, in the insular possessions of the United States, and in many other countries where Americans are temporarily residing.

Direction of the education and welfare of the natives of Alaska was assigned to the Bureau of Education when civil government was established in that Territory in 1885. That work now constitutes the most important administrative function of the Bureau. It involves far more than academic instruction in the school-room, for the first thing that had to be done was to teach the meaning of actual cleanliness and sanitary living. Like primitive people generally, the Alaskan natives, especially the Eskimos, lived largely by hunting and fishing, and were accustomed to move from place to place when it became necessary to find a better food supply. At best they led an uncertain and precarious existence, and because of their migratory habits it was exceedingly difficult to carry the means of civilization to them. It was proposed, therefore, in 1890, to import domestic reindeer from Siberia and by establishing reindeer-raising as an industry to give the Alaskan Eskimos an assured means of support and in the course of time to advance them from a nomadic to a pastoral people. A beginning was made in 1891, and 171 deer were brought over in 1892. A small congressional appropriation was made in 1893 to continue the experiment. The importations were continued until 1902, and in that time 1,280 Siberian deer were landed in Alaska. Congress has continued to appropriate money for the work and it has been remarkably successful. Reindeer 'stations' have been established at convenient places, and in them young Eskimos are taught to care for the deer. After sufficient training each apprentice received a small number of animals and he is allowed to establish a herd of his own under the supervision of officers of the Bureau of Education. There are now approximately 259,000 reindeer in Alaska and two-thirds of them are owned by natives.

In the meantime the other educational and philanthropic work of the Bureau in Alaska has also progressed. School work, largely industrial in its character, has been carried on, medical relief has been extended, sanitary methods of living have been maintained, commercial enterprises of the natives have been fostered, and destitution has been relieved so far as possible with the resources at the command of the Bureau. During the year 1921-22 the field force in Alaska included 5 superintendents, 144 teachers, 8 physicians, 14 nurses, 5 nurses in training, 16 hospital attendants, and 7 herders in charge of reindeer belonging to the government. Seventy schools were in operation with an enrollment of approximately 4,000. Orphanages were maintained at Kanakanak and Tyonek for the care of children left destitute by the epidemic of influenza which prevailed in these

regions, and hospitals were maintained at Juneau, Kanakanak, Akiak, Nulato, and Noorvik. As heretofore, teachers in settlements where the services of a physician or nurse were not available were supplied with medicines for use in relieving minor ailments. The work extends through the Territory from the southernmost boundary to the northernmost cape. The majority of the villages are practically inaccessible during eight months of the year. The larger settlements have been reached, but there yet remain certain regions, especially difficult of access, into which the work has not been extended. Two of these regions were reached during the summer of 1921.

Other than the work in Alaska the only administrative function performed by the Bureau of Education is in connection with colleges of agriculture and the mechanic arts endowed by the Morrill act of 2 July 1862. By that act 11,050,000 acres of public land were distributed to the States in proportion to the respective numbers of senators and members of Congress; and though more than a half million acres remain unsold, the receipts from sales have reached about \$20,000,000, and the income amounted in 1921-22 to approximately \$1,009,225. Under later acts, \$2,550,000 is disbursed annually to the several States, Alaska, Hawaii, and Porto Rico, each receiving \$50,000. These funds are expended for the agricultural and mechanical colleges under the supervision of the Commissioner of Education, who must certify that moneys previously disbursed have been expended in accordance with law before a new allotment can be made to any State. The present Commissioner of Education is Dr. John J. Tigert.

THEODORE HONOUR,

Secretary to the Commissioner of Education.

EFFICIENCY, United States Bureau of

The duties of the United States Bureau of Efficiency have to do only with the administration of government offices. They include surveys of business methods and investigations of duplication of work in the various branches of the government service; studies of the personnel problems of the several executive establishments; and the establishment and general supervision of a standard system of efficiency ratings for the classified civil service in Washington. A special report was submitted to Congress during the year 1922, describing the statistical work of the government. This report covers in detail the activities of every branch of the Federal establishment engaged in the collection or dissemination of statistical information. The recommendations embodied in the report contemplate the reorganization of the Bureau of the Census; the transfer of a large number of statistical inquiries to that bureau from other branches of the service; the collection of more comprehensive statistics relating to internal commerce; the elimination of certain statistical activities now conducted from time to time by the government; and the discontinuance of the free distribution of statistical publications.

The Bureau has worked in co-operation with the Bureau of the Budget since the establishment of that organization in July, 1921, in investigating the organization and methods of the various

government branches. It has acted as staff agency for the joint congressional committee on departmental reorganization, making special investigations and reports at the call of the chairman. Surveys of the business methods of 17 government offices were undertaken during the year 1922, at the request of the administrative officers concerned, recommendations being submitted for changes in accounting, filing methods, office procedure, personnel, and organization. The work of setting up a uniform system of efficiency ratings in the departments was the major activity of the year. The application of the system has so far been limited to employees engaged in clerical or routine work. Exclusive of skilled craftsmen in the Government Printing Office and the Bureau of Engraving and Printing, about 75 per cent of the total number of employees in the departmental service are now rated under the prescribed procedure. The principal features of this system are as follows: Salary standards are fixed for all types and classes of work; employees are classified according to the character of the work performed in order that each position may be provided with the proper salary standard; efficiency ratings are assigned twice each year, as of 15 May and 15 November, to prepare for adjustments and other personnel changes on 1 July, and 1 January, respectively. Employees are rated chiefly on two factors: quantity of work and quality of work. As a prerequisite to the application of salary standards under the rating system the Bureau made a classification of all employments in the departmental service, which is now in effect in all branches.

JOSEPH P. RAGLAND,

Member of the Staff of the Bureau of Efficiency.

EGGS. See POULTRY AND EGGS.

EGYPT, a kingdom of northeast Africa and a former British protectorate with its capital at Cairo. The area of the kingdom is about 350,000 square miles if the desert regions be included and 12,226 square miles if the cultivated and settled areas of the Nile Valley and Delta alone be considered. The population is 12,750,918 according to the census of March 1917, or 1,061 persons to the square mile. The chief cities are: Cairo, 790,939; Alexandria, 444,617; Port Said, 91,090; Suez, 30,996; Damietta, 30,984; Tanta, 74,195; and Mansura, 49,238.

Education and Religion.—The native elementary schools are called Maktabas and are very numerous. In 1921 there were 3,162 of these under control of the central department of education and attended by 202,257 pupils. In the same year there were 3,317 Maktabas under the control of the provincial councils attended by 210,850 pupils. In addition there are several elementary training colleges for teachers, industrial, agricultural and commercial schools and higher primary schools. There are also a school of law, military school, high school of agriculture, police and reformatory schools, arts and crafts, and a school for quadis. There is a university at Cairo. According to religious profession the population is divided as follows: 11,658,148 Moslems; 854,773 Orthodox Christians; 107,687 Roman Catholics; 47,481 Protestants; 14,416 other Christians and 59,581 Jews.

The University of El-Azhar at Cairo is the chief centre of Islamic learning, having 9,749 students and 405 professors. The Copts are the chief Christian body and the oldest, dating from the 1st century. The head of the Coptic Church is the Patriarch of Alexandria.

Finance.—The revenue for the year 1922 was 38,682,000 Egyptian pounds balanced by expenditures of an equal amount. The total debt of the kingdom amounts to 92,971,740 pounds.

Production and Industry.—The arable area of Egypt is about 8,000,000 acres. The agricultural year is divided into three parts, of which the first begins in November with the sowing of cereal crops which are harvested in May; the second period begins in March and is marked by the sowing of cotton, sugar and rice; and the third begins in July with the planting of rice, Indian corn and the usual vegetables. The three crop system is practiced in Lower Egypt and the Fayum, where the irrigation system is perfected. The area under cotton in 1921 was 1,292,000 acres which yielded 4,600,000 quantars of cotton. The area and yield of wheat in 1920 were 1,190,290 acres and 863,022 tons; of barley, 340,231 acres and 227,489 tons; while 1,937,869 acres were planted to Indian corn and 164,228 acres to rice and 53,475 acres to sugar cane. In 1920 13,795 tons of sugar were exported and 4,001,467 quantars of cotton (quantar equals 99 pounds approximately). The chief mineral products are phosphate rock, petroleum, manganese iron ore, nitrate shale, sodium, talc, clay, gypsum, salt, turquoise, alum, granite and sulphur.

Commerce.—The contraction in the purchasing power of the Egyptians and the general commercial depression are illustrated by the preliminary figures for the foreign trade of Egypt during 1921 which late in 1922 made their appearance. The following table gives a comparison between these figures, those of the preceding two years and of the last normal pre-war year:

	1913	1919	1920	1921
Imports...	\$37,656,383	\$56,321,280	\$102,595,539	\$55,907,023
Exports...	42,799,997	75,891,495	88,478,902	36,414,614
Re-exports	578,251	4,307,401	2,551,894	6,127,894

The above figures show that compared with 1920 imports declined by 45 per cent and exports by 57 per cent while re-exports have increased by 150 per cent. Incidentally imports are 50 per cent higher than they were the year before the war and exports are 15 per cent lower, while re-exports have undergone enormous expansion owing to the opening up of Palestine, Syria and Arabia, and the resumption of transit trade with Turkey and the Balkans, which is likely greatly to increase the traffic in the Egyptian ports.

The main imports during the year were meat, £E.344,883 (£E.223,000 from Australia and New Zealand); boots and shoes £E.248,768 (£E.124,690 from the United Kingdom and £E.31,441 from France); wheat and maize, £E.1,741,270 (£E.283,817 from Australia and New Zealand and £E.1,-

076,311 from the United States); barley, £E.609,702 (£E.499,045 from Rumania); rice, £E.459,584 (£E.264,497 from India); wheat and maize flour, £E.7,173,409 (£E.2,325,997 from Australia and New Zealand and £E.3,144,765 from the United States); sugar, £E.263,696; coffee, £E.561,071 (£E.324,240 from Brazil and £E.121,420 from India); vegetable oils, £E.416,511; petroleum, £E.1,389,181 (£E.552,410 from the United States, £E.264,580 from Rumania, £E.104,260 from Persia, and £E.424,158 direct from Suez refinery); benzine, £E.300,401; oil-fuel, £E.553,986 (£E.322,596 from Mexico and £E.154,792 from Suez refinery); paper and printed matter, £E.998,545 (in which generally speaking the British share is slightly on the decrease); wood for building, £E.1,591,143 (Sweden and Finland provided one-third); wooden furniture, £E.275,701 (in which British manufacturers increased their share); coal, £E.3,591,143 (£E.1,697,195 from the United States, £E.1,063,376 from the United Kingdom, and the balance from British possessions); cement, £E.197,620 (£E.101,058 from Serbia and £E.47,899 from the United Kingdom); nitrate of soda, £E.537,304 (Belgium and Chile each supplied roughly half); household soap, £E.611,384 (Palestine supplied £E.261,772, and the United Kingdom, £E.230,050).

Cotton yarns amounted to £E.591,618 (the United Kingdom supplied one-third, India one-half, and Italy the balance); sewing cotton, £E.297,746 (the United Kingdom supplied two-thirds and Belgium one-fifth); cotton goods classified as light and heavy stood at £E.7,942,683 (the United Kingdom supplied 87 per cent, and Italy 10 per cent, the latter country offering serious competition only in textiles dyed in the yarn); woollen textiles attained a value of £E.931,351 (Great Britain supplied 80 per cent); manufactured iron and steel, £E.2,273,141 (in which our sole serious competitor was Belgium); stationery and internal combustion engines, £E.302,762 (two-thirds came from the United Kingdom); rail locomotives, £E.506,937 (practically all of which came from the United States); machines and machine parts, £E.1,163,723 (half came from the United Kingdom and 15 per cent each from France, Germany, and the United States); motor vehicles, £E.471,563—926 in number—(more than 30 per cent came from the United States, 25 per cent from Italy, and 20 per cent from France); and tobacco, £E.1,973,128 (mostly from China, Greece, Russia and Turkey).

Communications.—Egypt has 2,311 miles of railways owned by the state and 721 miles owned by private companies. In addition there is the Sudan military railway to Khartum, 375 miles long. Cairo is connected with Palestine by a railway bridge (swing type) over the Suez Canal at Kantara. There are 2,846 post offices, 8,558 miles of telegraph lines with 21,000 miles of wire.

Government and Recent History.—Adly Pasha's cabinet fell in December 1921 and thereafter the leader of the Nationalists, Zagloul Pasha appealed to his followers to liberate the country. He was deported on the order of General Allenby but on 23 January his followers issued a boycott manifesto modelled on the Ghandi non-co-operation movement in India. It

incited the government servants to strikes and deliberately interfered with the public order. General Allenby retaliated the next day, arresting the signers of the manifesto and suspending the newspapers that had published it. On 29 January the British government issued a manifesto of its own, in which was stated: "His Majesty's Government have explicitly stated their readiness to invite Parliament to terminate the protectorate, to recognize Egypt as a sovereign state and to agree to the re-establishment of an Egyptian Ministry of Foreign Affairs as soon as they were satisfied as to the following conditions: First, that imperial communications are assured; second, that Britain retain the right and power to afford protection to foreign communities; and, third, that Egypt is safeguarded from all foreign interference. As soon as an agreement satisfying these conditions has been drawn up, there will be no hesitation in inviting parliamentary sanction to such an accord."

General Allenby was ordered to return to England to report on the situation. On 28 February Premier Lloyd George announced in the House of Commons that Britain had definitely abandoned the protectorate over Egypt and the latter was declared to be a sovereign state. 'The Declaration to Egypt,' made public at the same time, stated that martial law would be withdrawn as soon as the Egyptian government passed an act of indemnity. Pending the conclusion of a general agreement, the British government reserved to its discretion four subjects: (1) The safety of imperial communications; (2) Defense of Egypt against foreign aggression; (3) Protection of foreign interests in Egypt and of minorities; (4) Guarantees for British interests in the Sudan. The policy of the British government in Egypt was sustained in the House of Commons by a vote of 202 to 70, after some severe criticism from the Liberal benches.

Sarwat Pasha, a prominent Nationalist at once formed a cabinet in Egypt on 1 March, taking over the premiership and the portfolio of the interior and that of foreign affairs. The new cabinet held its first council in the Abdin Palace, Cairo, on 6 March with the Sultan Fuad I presiding. It was agreed to limit the prerogatives of the Sultan under the terms of the new constitution and to change his title to that of king of Egypt. On 16 March, Fuad was proclaimed king of Egypt. A rescript, issued the previous day, announced that Egypt had become an independent state and that the Sultan would assume the title of king. Simultaneously all British ambassadors and ministers abroad were instructed to inform all foreign governments of Egypt's new status and of Great Britain's abandonment of the Protectorate, at the same time pointing out that as far as Great Britain's special relations, established and recognized by all powers for 40 years, are concerned, the status quo will be maintained until such time as Egypt herself embodies them in the direct negotiation of a treaty with these countries. After the joy occasioned by the gaining of her independence Egypt was plunged into gloom by the prospect of losing the Sudan, over which she had had joint sovereignty with Great Britain since 1899. The Sudan was gradually incorporated in Egyptian territory under the Khe-

dive Ismail, who appointed Sir Samuel Baker, Governor. The latter formally annexed it to Egypt on 26 May 1870. The Arabs under the Mahdi, Mahommed Ahmed, revolted in 1881, annihilated the army of Hicks Pasha two years later and on 25 Jan. 1885 took Khartum and killed Chinese Gordon. The Arabs held the Sudan until 1898, when Kitchener reconquered it from them with an Anglo-Egyptian force. The British Government then claimed "by right of conquest" to share in the settlement of the administration and legislation of the region. An agreement, signed 19 Jan. 1899, provided for the joint sovereignty of Great Britain and Egypt over the Sudan. It appeared from public utterances of General Allenby in April that Great Britain had no intention of abandoning her sovereignty over the Sudan.

In April the new Egyptian Government appointed a Constitutional Commission of 35 members to draft a constitution for the kingdom. On 7 May it was announced that the commission had decided to decree in the constitution that the Sudan was an integral part of the kingdom and that the king of Egypt is the sovereign of the Sudan. The Sudan region is potentially the most fertile land in Africa and covers an area of 950,000 square miles. Great irrigation works have been projected and the Sudan will control the water supply on which the very life of Egypt depends. On 15 April the King issued a rescript fixing the succession to the throne, making it hereditary in the dynasty of Mehemet Ali, in direct male line by primogeniture. A new flag was adopted with a green background carrying a white crescent and three white stars.

The United States formally recognized the new kingdom on 27 April with the stipulation that it declined to accept the abolition of the capitulations. The rights under the capitulations have existed since 1830, when the United States made a treaty with Turkey under which American citizens received a guarantee of the right of trial in American consular courts, rather than in Turkish courts. The Egyptian government has decided to present to the city of New York a part of the celebrated Temple of Philae, which in its ancient site was partially submerged when the Assuan Dam was constructed.

A government commission, with Rushdi Pasha, as chairman, set about drafting a constitution for the new kingdom but the work proceeded very slowly. As the draft now stands it calls for a Parliament of two chambers, in the upper of which the members are to be chosen by the executive and in the lower by popular vote. In the lower chamber there will be a representative to each 75,000 inhabitants. Voters must have attained their twentieth year and have paid the minimum land tax. Despite the settlement with England, Lord Allenby and 10,000 British soldiers remained on Egyptian soil and the capitulations remained in force over the protest of the Egyptians that they were a virtual denial of sovereignty. Considerable friction was caused by the continued refusal of Great Britain to repatriate Zagloul Pasha from the Seychelles Islands. The year witnessed the lowest water in the Nile in all the period since records have been kept. The White Nile was

reported practically dry from Gondokoro to Nibuelo, near Lake Albert, in June. Steamers could not proceed above Rajaf. A British officer, Wilfred Cave, assistant commandant of police in Cairo, was shot and killed by assassins in Cairo on 24 May, while returning from a bicycling tour. Six bullets of different calibre were found in his body. Agitation was rife for the purchase by the government of greater quantities of cotton from the Alexandria market. The government had purchased about 2,500 bales early in the year but on 18 May it was stated that the government had no funds available for further purchases of cotton.

The constitutional commission offended the Copts by refusing to provide for proportionate representation and the Coptic bishop of Alexandria resigned from the commission in protest on 10 June. This question as well as that of the sovereignty of the Sudan is reserved for future settlement with Great Britain. The American consul-general on 19 June was made first United States Minister to Egypt. On 23 July, the British government, through the high commissioner, General Allenby, expressed forcibly to the Egyptian government its grave concern at the frequent outrages against British officials in Egypt and its regret at the failure of the Egyptian government to punish the offenders. The warning was given that if the outrages continued the British government would be compelled to reconsider its attitude towards Egypt. Lawlessness continued throughout the summer and military courts meted out severe sentences to prisoners found guilty. Seven Zaglulists were condemned to death by a British military court in August but the sentence was commuted to seven years penal servitude and fines of £5,000 on 14 August. On 4 September it was announced that the leader of the Nationalists, Zaglul Pasha, had been transferred to Gibraltar from Seychelles because of impaired health. The draft of the new constitution was published on 13 August and the day following the *Alahram*, an Arabic newspaper, was suspended for criticism of the draft. It declared that the proposed constitution placed too much power in the hands of the sovereign and should be drawn on more democratic lines. On the other hand, it was reported that the King thought the constitution too liberal. On 5 September a decree was promulgated exiling Abbas Hilmi, former Khedive, depriving him of exercising political rights through an intermediary and confiscating his property, which was to be sold at public auction, his debts paid and the balance forwarded to Abbas Hilmi. In the autumn the chief political questions agitating the country were the representation of minorities and the future of the Sudan. The proposal to guarantee a minimum representation to minorities in the new Parliament was rejected by a vote of 15 to seven in the constitutional commission. Thereafter vigorous protests were made by the Copts, Syrians and Jews. The inclusion of the Sudan by the commission was offset by a visit of General Allenby to Khartum where he received 30 sheiks of the Sudanese tribes who pledged their loyalty to the British government. The victory of the Turks over the Greeks in Asia Minor had its repercussion in Egypt where the mosques were illu-

minated and Islamic flags carried in parades. Efforts were made towards the end of the year to abolish martial law throughout the country and a supplementary section of the penal code was prepared to this end in order that the civil authorities might be enabled to deal adequately with offenses before punishable only under martial law. The relations with the Sudan were complicated by the decision of the Sudan government to retain sole control of the Sennar Dam because it was bearing the expense of these undertakings. The economic situation continued to improve as the year closed, the only country showing a loss in trade with Egypt being the United States. The American tariff on cotton caused uneasiness in Egypt, a good market having been built up in America for this staple product of Egypt. Discrimination against American shipping caused some friction in official quarters. At the close of the year it was evident that the coal trade was being lost to the United States and again reverting to England. The reigning King is Fuad I, son of the Khedive Ismail Pasha. Early in 1923 Zagloul was permitted to leave Gibraltar, but was still forbidden to return to Egypt.

EINSTEIN THEORY, Tests of. See ASTRONOMY; PHYSICS.

ELECTIONS IN 1922. On 7 Nov. 1922 there were held throughout the United States the usual elections of Congress, governors and other officers of the various States. The broad result showed a great reduction in the overwhelming Republican majorities of two years before and a corresponding encouragement of the Democrats in their hope of electing their candidate for President in 1924. Of the Republican reverses, there are various explanations. It is argued that President Harding's 7,000,000 majority in 1920 was less a majority for the Republicans than a majority against the Democrats and especially against Woodrow Wilson who was, when his term came to an end, unpopular. The war had been followed by a great disturbance of trade, by heavy taxation and by a peace, held in many quarters to be unsatisfactory. Among sections of the voters, particularly of German and Irish origin, there was hostility to the Treaty of Versailles and, generally, the League of Nations was a subject of misgiving.

In 1922, however, none of these issues helped the Republicans. A policy of not interfering in European affairs was found, as many thought, to involve a considerable loss of European trade, and a consequent fall in prices of cotton and farm produce. A somewhat severe tariff, though in line with Republican traditions, made few friends and many critics of the administration—reproducing in fact the situation which caused anxiety to President Taft during his tenure of the White House. Also the refusal of the President to accept a bonus for the demobilized soldiers, unless Congress would raise the revenue to pay for it, while it pleased the financial and commercial leaders of opinion, caused a disappointment among many young men and their friends whose expectations of a handsome sum of money had been aroused. All these causes militated against the Republican candidates.

With regard to the prospects for 1924, much will depend on the state of trade and employment and also upon conditions in Europe. The Democratic Party is committed to a League of Nations and a certain active participation in world affairs. If the world be still disturbed, it may be that a majority will still wish the country—in the words of Colonel Harvey, American Ambassador in London—to be well out of it. On the other hand, there will doubtless be a tendency to attribute some of the trouble in Europe to the failure of the United States to play her part in that sphere of the world's affairs.

The 67th Congress, now retired, consisted of a Senate and House of Representatives, composed as follows:

	Republicans	Democrats	Majority
Senate.....	59	37	22
House.....	301	131	170

In the House, there was one Socialist and two vacancies, so making a total of 435.

In the 68th Congress, the position of parties is

	Republicans	Democrats	Majority
Senate.....	53	42	11
House.....	223	206	17

The Senate also includes one Farmer-Labor candidate, Hendrik Shipstead of Minnesota who brings up the number of senators to 96. In the House, there is one Socialist, Victor L. Berger of Milwaukee, who was twice expelled from Congress on account of his views during the war; one Farmer-Labor candidate, Knud Wefald of Hawley, Minn.; and one Independent, Rev. O. J. Kvale of Benson, Minn., who defeated Andrew J. Volstead, whose name had been given to the act enforcing Prohibition. This contest was curious because Kvale declared himself "drier than Volstead" and yet received the support of the Association Opposed to the Prohibition Amendment which was determined to exclude Volstead from Congress, at any cost. With three vacancies, these unattached representatives make up the House of 435.

A Republican majority of 24 in the Senate has been reduced to 11 over the Democrats and 10 over all parties, while in the House, a Republican majority of 170 has been reduced to 17 or 14 over all parties.

Miss Alice Robertson of Oklahoma, who, until the election of Mrs. Winnifred Mason Huck of Chicago, to fill the vacancy caused by the death of her father, William E. Mason, was the only woman representative in the 67th Congress, was defeated. The only woman who now sits in the House is Mrs. Mae Ella Nolan of San Francisco, who at a special election was chosen to fill the vacancy caused by the death of her husband, John J. Nolan. Three women stood as candidates for the Senate, but were all defeated. As an act of courtesy, however, Mrs. William H. Felton, on 22 November, took her seat as junior senator for Georgia and addressed the chair.

Senator Newberry of Michigan, whose election over Henry Ford led to an enquiry into irregularities, resigned. An attempt through a recount to unseat Senator Lodge of Massachu-

ELECTRIC BOILERS

setts, who was elected by a narrow majority only, failed. Senator Miles Poindexter of Washington was among the defeated.

Among the new senators elected were Edward I. Edwards of New Jersey, formerly Governor; Dr. Royal S. Copeland of New York City, health commissioner under Mayor Hylan; until he resigned to take his seat in the Senate; Simon D. Fess, Ohio; Col. Smith W. Brookhart, Iowa, and Thomas F. Bayard, Delaware.

Of the elections for Governor, two stand out as sensational. In New York State, former Gov. Alfred E. Smith, Democrat, defeated Governor Miller by 1,397,670 votes to 1,011,725, a plurality of 385,945. In the city itself, Smith's lead was about 480,000 a very remarkable figure.

Scarcely less startling was Gifford Pinchot's success in Pennsylvania, where he first captured the nomination for Governor at a primary in which the entrenched forces of a powerful Republican machine were ranged against him and afterwards carried the State by a plurality of 250,000.

The elections did not disclose any third party. There was no separate ticket for Labor and Socialism, as in Britain. Nor was there any Progressive crusade, like that led by Theodore Roosevelt. But undoubtedly the historic parties, as organized, were given ample food for thought.

One interesting possibility, much discussed in advance, is the appearance of Henry Ford as an aspirant for the Democrat nomination for President and even as a third candidate if this nomination is refused.

The British election has been dealt with under events in that country. Under Ireland, there will be found particulars of the Irish election.

The general election in Poland was held in November 1922. The results were:

SENATE

Christian Union of National Unity (Right and Affiliated Parties).....	51
Polish Populist Party, "Piast" (Witos Group).....	17
Polish Populist Party, "Wyzwolenie" (Liberation Group).....	8
Polish Socialist Party.....	7
National Labor Party.....	2
Bloc of National Minorities and East Galician Zionists..	26
Total.....	111

HOUSE OF DEPUTIES (Sejm)

Christian Union of National Unity (Right).....	163
Centre Parties.....	6
Polish Populist Party, "Piast" (Witos Group).....	70
Polish Populist Party, "Wyzwolenie" (Liberation Group).....	49
Radical Peasants' Party (Left), (Okon Group).....	2
Polish Socialist Party.....	41
Nationalist Labor Party.....	18
Communists.....	2
Bloc of National Minorities.....	66
East Galician Zionists.....	15
Radical Ruthenians of East Galicia.....	5
Polish Populists.....	1
Jewish Lists.....	2
Total.....	440
Gr. total.....	551

The elections in Poland were followed by a tragedy which threw the country into mourning. On Dec. 1922 President Gabriel Narutowicz

was inaugurated into his office amid rioting. On the 16th, he was assassinated by an artist of unbalanced mind called Niewiadomski. He was succeeded as President by M. Wojciechowski. The Prime Minister is Gen. Ladislas Siborski. He has to depend on radical groups—Socialists, peasants and non-Poles—who control 40 per cent of the seats of the Diet. It is the Diet voting as a whole that chooses the President. Narutowicz had a majority of 289 votes to 228. His successor, Wojciechowski received 298 votes to 221.

The Australian elections were held in December 1922. The results were as follows: Labor Party, 29; National Party, 27; Liberal and Country parties, 19. William Morris Hughes, Prime Minister, saw five of his colleagues in the government defeated. Labor gained four seats; the Liberal Country Party gained seven seats and the Nationalist or Hughes Party lost 11 seats, so finding itself a decided minority in the House. Finding his situation impossible, Mr. Hughes resigned and was succeeded by Stanley M. Bruce, Commonwealth Treasurer and Nationalist.

PHILIP WHITWELL WILSON.

ELECTRIC BOILERS. The high cost of coal and the comparatively low cost of hydro-electric energy induced European countries, like Switzerland, Italy, Germany and Sweden, since the outbreak of the war, to make use of hydro-electric energy for steam and hotwater heating. Instead of using coal or wood in the furnaces under the boilers, specially constructed boilers are provided with electrodes, which are supplied with electric current drawn from available water-power developments.

These electric boilers are used in manufacturing plants, where steam and hot water are required in the manufacturing processes and for heating buildings. Hospitals, schools and private residences are also provided with these boilers, which have an additional advantage of cleanliness.

For ordinary steam and hot-water heating, low-pressure steam boilers are used; but many manufacturing plants need high-pressure steam, and a large number of electric-boiler plants have been installed in the various countries, ranging in pressure of from 8 to 14 atmospheres, or from 117.8 to 205.8 pounds per square inch. The latter pressure is equal to that in modern and large-sized coal-boiler steam plants of electric central station concerns.

The electric boiler eliminates the transportation of high-priced coal, as current may be drawn from water-power developments or even from distant located steam-electric plants, principally during non-peak loads of such plants.

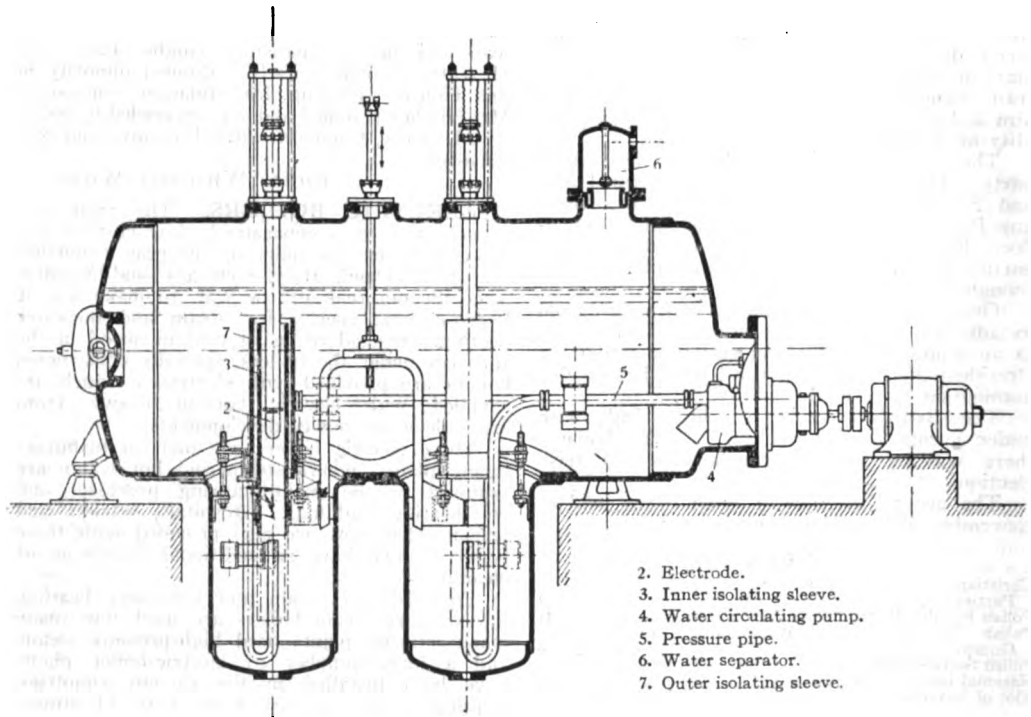
The economical factor of such electric boiler installation depends mainly on the cost of coal in comparison with the cost of electric current at the point of consumption. The average efficiency of the transformation of coal into steam is about 60 per cent, while the average efficiency of transforming coal into mechanical energy is about 11 per cent. The efficiency of transforming hydraulic energy into steam by means of electric-heated boilers in about 62½ per cent, as shown by tests, while the electric boiler itself has an efficiency of 98 per cent.

against the average 60 per cent coal-fired boiler, which has losses in ashes, radiation, leakage in the boiler-wall setting and smoke—or mainly in incomplete combustion. One kilowatt hour in an electric boiler will evaporate 2.9 pounds of water at 15° Centigrade (59 F.) to a steam pressure of eight atmospheres (117.6 pounds).

Different types of electric boilers have been developed during the past eight years and several hundred installations are now in operation in Switzerland, Italy, Germany and Scandinavia, all countries where water power is comparatively cheap. The most frequent types are boilers provided with electrodes (resistances) inserted in the water to be heated. The water evaporates at the surface, while in coal heated boilers the

section of an electric boiler, provided with two stationary electrodes, marked 2; the inner sleeve 3, is automatically raised and lowered according to the water level in the boiler. The outer sleeve 7, is stationary. The pump 4, circulates the water through the pressure pipe 5, and discharges it upward through the inner sleeves, against the electrodes. The water separator 6, prevents water from entering into the steam supply pipe.

When such a boiler is used, say for 200 pounds pressure, steam is drawn off as in a high-pressure coal-fired boiler plant, that is for direct consumption. For low steam pressure plants reservoirs or accumulators may be used in addition. Should the hydro-electric source,



2. Electrode.
3. Inner isolating sleeve.
4. Water circulating pump.
5. Pressure pipe.
6. Water separator.
7. Outer isolating sleeve.

water evaporates at the lowest part of the boiler nearest the fire and the steam must pass when rising to the surface through colder water and therefore the moisture in steam generated by coal, runs as high as 8 per cent, while in electric boilers it is not higher than 3 per cent.

The current used is mostly three-phase alternating, as direct current, also used for low-voltage boilers, disintegrates the water at a certain voltage, into hydrogen and oxygen, and therefore additional precautions must be taken. A number of electric boilers operate at a pressure of from 500 to 1,000 volts, and many at a pressure of from 5,000 to 15,000 volts. Experience has shown that 20,000 volts may be used without difficulty. The use of high voltage eliminates step-down transformers, and the current can be drawn directly from distance transmission lines.

The accompanying drawing shows a cross-

section of an electric boiler, provided with two stationary electrodes, marked 2; the inner sleeve 3, is automatically raised and lowered according to the water level in the boiler. The outer sleeve 7, is stationary. The pump 4, circulates the water through the pressure pipe 5, and discharges it upward through the inner sleeves, against the electrodes. The water separator 6, prevents water from entering into the steam supply pipe.

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FRANK KOESTER,

Consulting Engineer; Author, "Steam Electric Power Plants," "Hydro-Electric Developments and Engineering," etc.

ELECTRIC FURNACES. See METALLURGY.

ELECTRICITY. According to one of the leading electrical engineers of the United States the greatest electrical developments during 1922 were in radio and wire transmission and in the "tubes" used in amplifying, receiving, etc., and applied to other engineering work. These developments, the authority referred to asserts, "are truly remarkable." With respect to developments in other electrical lines, he states "they have been to a great extent merely the well-known application of well-known principles to well-known devices in slightly enlarged sizes or on a somewhat enlarged scale." The output of electric current during the year amounted to approximately 51,000,000,000 kilowatt hours. Over \$750,000,000 was raised for refunding, new construction and betterments by the electrical companies of the United States. An interesting development of the year was the manufacture by the General Electric Company of a 30,000 watt incandescent lamp, having a capacity of about 60,000 mean spherical candle power—the largest lamp of its kind ever manufactured. Throughout the world much interest was manifested in the electrification of railways. See also ELECTRIC BOILERS; ELECTRIC MINING; HYDROELECTRIC DEVELOPMENT; RADIO. See also under RAILWAYS.

ELECTRIC MINING. Electric current has been used in mines for the operation of drainage-pumps, air-compressors, ventilators, breaker-machinery, drills, etc., and also for hoisting for a number of years. However, most of the mine hoists are of the type used also with steam engines, but, instead of steam-engines, motors have been substituted therefor.

European countries (the continent of Europe) have developed and used for a number of years highly efficient hoisting systems, so that to-day no more mines are put in operation without this equipment and the old steam and the ordinary motor hoist are being rapidly replaced, as it pays to replace them.

The adoption of this radically new system of hoisting is due not only to the economical operation but also due to the safety and flexibility in operation. Where previously steam had to be generated at each mine for operating the machinery, to-day electric current is drawn from distant water-power developments or from centrally located steam-electric power plants, supplying a number of mines with current from one place of generation. To obtain still further economy and with a greater factor of continuous operation, central steam-electric plants are interconnected with hydro-electric plants, by means of the over-head high-tension transmission systems, and the individual plants "help each other out," that is, plants running temporarily on peak-load receive current from plants running at normal or at low-load. In some cases there are as many as 10 central stations so interconnected.

The modern hoisting system as used in Europe, consists mainly in the controlling device of the hoisting machinery. There are, for instance, the Ward Leonard system and the Ilgner system of operation and control. A prominent feature in the Ilgner system is the fly-

wheel, attached either mechanically or electrically to the hoisting equipment. On account of the high speed, this flywheel is made of a solid steel disc, having often a peripheral speed of 30,000 feet per minute or more. Instead of the slow hoisting speed of the old-time steam hoist, the cages are lowered and hoisted with a two-ton load at a speed ranging from 10 to 20 meters per second, or from 3,936 to 7,872 feet per minute. The latter speed is 42.8 miles per hour. These factors are especially of importance for deep mines, such as are found in Germany, where depths of 500 to 750 metres (1,640 to 2,460 feet) are not unusual; in fact, there is one mine in Germany which has a depth of 4,000 feet.

The steam engine and the ordinary motor-driven hoist consume too much in starting and stopping and making the proper landing at the different levels, and, in addition, consume too much power to start a cage, especially when loaded. The quick accelerating and quick retarding time in the hoisting process is accomplished by a control of electric-actuated switches to reverse the current and thereby the hoisting motor; this is, in addition, augmented by the flywheel, which keeps up the high speed, running in one and the same direction.

Often a single hoist is provided with one controlling dynamo, one three-phase generator, two exciter machines, one hoist motor and the flywheel. This entire equipment is interconnected, partly mechanically and partly electrically, and actuates as a unit. It is automatically controlled, so that cages stop at the individual levels, just flush with the railways in the veins or at the surface; this in spite of the tremendous starting, hoisting and stopping speed. The advantage of such a combination of expensive machinery and apparatus, instead of the primitive single motor and single switch control hoist, is the great reliability in operation and the great efficiency produced thereby. The cost of coal is reduced considerably and the output increased.

Besides the specially designed electric motors used in mines for the operation of various equipments, electric haulage has been greatly improved. The storage battery locomotive has been replaced by electric locomotives, drawing current from overhead wires suspended six feet above the rails. As a rule, each locomotive is equipped with two direct-current motors of 15 horsepower each, operating at 250 volts. The transformer stations, to step-down the line voltage (5,000 to 10,000) to the 250 operating voltage, are often located, instead of on the surface, at the veins, some 2,000 feet under the surface; this of course depends on the depth of the deepest vein. Other electric auxiliaries in mines are the electric-lighting systems and the loud-speaking telephones and alarm systems. It can be safely stated that in modern mining the electrical equipment is far better developed in refinement and with a much greater factor of safety in operation than the electrical equipments in most other industries.

FRANK KOESTER,
Consulting Engineer; Author, "Steam Electric Power Plants," "Hydro-Electric Developments and Engineering," Etc.

ELECTRIC RAILWAYS. See RAILWAYS.

ELECTROMETALLURGY. See METALLURGY.

ELEMENTS, Disintegration of. See PHYSICS.

ELLSWORTH COLLEGE, a non-sectarian, co-educational institution, founded in 1890 and located at Iowa Falls, Iowa. In 1922-23 it had a faculty of 19 members; number of students enrolled, estimated to June, 535; property valued at \$650,000, and an income of \$50,000. Ido Franklin Meyer, A.M., is president.

ELMIRA COLLEGE, a non-sectarian educational institution for women, founded in 1855 and located at Elmira, N. Y. In 1922-23 it had a faculty of 44 members, 500 students, property valued at \$1,000,000, and an income of \$281,084.05. Frederick Lent, Ph.D., is president.

ELON COLLEGE, a co-educational institution belonging to the Christian Church, founded in 1889 and located at Elon College, N. C. In 1922-23 it had a faculty of 33 members, 323 students, property valued at \$787,661.82 and an income of \$83,176.77. William Allen Harper, LL.D., is president.

ELWELL, Francis Edwin, American sculptor: b. Concord, Mass., 15 June 1858; d. Darien, Conn., 23 Jan. 1922. He studied sculpture under May Alcott in Concord and then went to the Beaux Arts, Paris. In this city he also studied under John Alexandre Falguière. He was the first American sculptor to model a statue in America that was erected in Europe. He received a medal at the Chicago Exposition, 1893; a gold medal twice from the Art Club, Philadelphia; a medal from the King of Belgium for study in architecture, and a medal at the Buffalo Exposition, 1901. He was curator of ancient and modern sculpture at the Metropolitan Museum of Art, New York, for several years. He was honorary colonel of the Seventh Rhode Island Infantry. He was a delegate to the Atlantic Congress for the League of Nations and speaker for the same. Colonel Elwell was a member of many societies in the United States and Europe including the International Longfellow Society, Dickens' Fellowship of London (Philadelphia branch), and the Cincinnati Art Club. His best-known works are: 'Death of Strength,' Edam, Holland; 'Lord Provost of Aberdeen,' Aberdeen; 'Awakening of Egypt,' Paris; 'Gen. Hancock,' equestrian statue, Gettysburg; Edwin Booth, Mount Auburn, Cambridge; 'Kronos' and 'Ceres,' two fountains, Buffalo Exposition, 1901; 'Dickens and Little Nell,' Fairmount Park, Philadelphia; 'New Life,' Lowell Cemetery, Lowell, Mass.; 'Intelligence'; busts of Levi P. Morton and Garret A. Hobart, United States Senate Chamber, Washington; 'Classic Art,' Art Palace, Saint Louis Exposition, 1904; 'Greece and Rome,' New York Custom House, 1904; marble bust of Col. E. T. Van Horn, Journal Office, Kansas City; monument to Gen. L. P. di Chesnola, Kensico Cemetery, New York; 'Despatch Rider of the American Revolution,' Orange, N. J.; 'The Flag,' Seventh Rhode Island Infantry; monument, Vicksburg, Miss.; 'Dante and Shakespeare,' Scranton Memorial Library; 'Kronos,' Harvard University; 'The

Orchid Dance,' Gorham & Co.; 'Lincoln,' East Orange, N. J.; bust of Hon. Robert Miller Walmsley, New Orleans; bust of Morris Patton; statue of Rear-Admiral Charles H. Davis, for the United States Naval Monument, Vicksburg; statue of Gen. Frederick Steele, National Military Park, Vicksburg, 1911; 'Acrosteria,' Agricultural Building, Panama Exposition, 1915; 'Genius of Memory,' Lowell, Mass., 1915, and heroic bust of Amzi L. Dodd, for Mutual Benefit Life Insurance Company, Newark, N. J.

ELWES, Henry John, horticulturist: b. 16 May 1846; d. London, 27 Nov. 1922. He was educated at Eton and on the Continent, served five years in the Scots Guards and traveled in Turkey, Asia Minor, India (four times), North America, Mexico (three times), Chile, Russia, Siberia (three times), Formosa, China, Japan (twice), and in Nepal and Sikkim. In 1886 he was scientific member of the Indian Embassy to Tibet. He was vice-president of the Royal Horticultural Society; was Victoria Medalist of the same, and was past president of the Royal English Arboricultural Society and of the Royal Entomological Society of London. He represented Great Britain officially at the Botanical and Horticultural congresses at Petrograd and Amsterdam. In addition to many papers for the *Transactions and Proceedings* of the Zoological, Linnean, Entomological, Horticultural and Agricultural societies, between 1869 and 1889, he published 'A Monograph of the Genus *Lilium*,' and 'The Trees of Great Britain and Ireland.'

EMERGENCY FLEET CORPORATION, United States. See MERCHANT MARINE OF THE UNITED STATES.

EMERSON, Charles Franklin, American educator: b. Chelmsford, Mass., 28 Sept. 1843; d. Hanover, N. H., 1 Dec. 1922. He was graduated from Dartmouth in 1868 and received the degree of A.M. in 1871. Upon graduation he was made instructor in gymnastics at Dartmouth and from 1868-72 was instructor of mathematics at the New Hampshire College of Agriculture and Mechanic Arts (at that time a part of Dartmouth College). In 1872 he was appointed associate professor of natural philosophy and mathematics and in 1878 promoted to Appleton professor of natural philosophy, which he held until 1899. From 1877-99 he was also instructor in astronomy. From 1893-1913 he was dean of the academic faculty of Dartmouth and dean emeritus from 1913 until his death—a total service to Dartmouth of 45 years. He was a member of the New Hampshire House of Representatives in 1915-16 and again in 1917-18.

EMMANUEL MISSIONARY COLLEGE, a co-educational institution under the auspices of Seventh-Day Adventists, founded in 1875 at Battle Creek, Mich., as the Battle Creek College. In 1901 it was moved to Berrien Springs and renamed Emmanuel Missionary College. In 1922-23 it had a faculty of 45 members, 625 students, property valued at \$500,000 and an income of \$300,000. Frederick Griggs, A.M., is president.

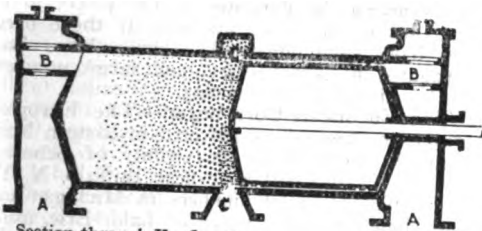
EMORY AND HENRY COLLEGE, a Methodist, but non-sectarian co-educational institution, the corner-stone of which was laid

30 Sept. 1836. It is located at Emory, Va. In 1922-23 it had a faculty of 13 members, 180 students, property valued at \$350,000 and an income of \$56,000. James N. Hillman is president.

EMPLOYERS' LIABILITY. See LABOR LEGISLATION.

EMPORIA COLLEGE, a Presbyterian co-educational institution founded in 1882 and located in Emporia, Kan. In 1922-23 it had a faculty of 25 members, 375 students, property valued at \$800,000 and an income of \$100,000. Frederick Wheeler Lewis, D.D., is president.

ENGINE, Unaflow or Uniflow. In 1908 Prof. Johannes Stumpf of the Charlottenburg University, Germany, adopted the idea which had been tried by Eaton in the United States in 1857, and Todd in England in 1885, of taking the steam into the cylinder at the ends and exhausting it at the centre, in order that there should be no back-flow of cold exhaust steam across the hot inlet end, as is being done in single and compound expansion engines. While Eaton's and Todd's undertakings had absolutely no economical and commercial success, Stumpf succeeded to such a degree that this engine competes in steam consumption with the best compound engines and the best steam turbines, and, due to the simplicity of construction, it is correspondingly cheaper in first cost as well as in maintenance and cost of operation. Stumpf named the engine "una-flow," which means one direction flow; in the English-speaking countries it is called "uniflow" engine.



Section through Unaflow Engine Cylinder and Piston.

The accompanying drawing shows a cross-section through a unaflow engine cylinder and piston. The live or high-pressure steam enters at "A," passes the popped valve "B" and enters here the cylinder, pushing the piston forward and the steam escapes in the middle of the cylinder at "C;" the same process is repeated from the other end of the cylinder. The hot live steam keeps the cylinder heads always at a high temperature. This prevents condensation and the full force of steam expansion against the piston takes place. This heating of the cylinder heads, as devised by Stumpf, made this engine a success, and this is the one principal feature which Eaton and Todd failed to develop. The moisture in the steam is greatest nearest the piston when the piston uncovers the exhaust port "C," and this moisture is swept out by the flow of the exhaust steam. At this time the inlet head, being dry, does not give off its heat. Therefore when the piston covers the exhaust port on its return stroke, there being no moisture or cold cylinder head to absorb the heat of the compression, and heat being added from the head jacket during compression, the tem-

perature of the steam remaining in the clearance at the end of the compression stroke (usually 10 per cent cut-off) will be higher than the temperature of the boiler or live steam. When the piston moves away at the beginning of the next stroke, the high-pressure live steam will enter the cylinder with a higher temperature than its own, hence there will be no initial condensation.

Contrary to the pistons in single and compound expansion engines, the pistons of all unaflow engines are long—practically nine-tenths of the stroke, which also requires a cylinder practically twice as long. Unaflow engines are built in all sizes, and up to the present time some have been built up to 14,000 horsepower capacity, while the largest reciprocating engines of single and compound type never have been built of more than 7,500 normal horsepower. The friction loss in these engines is comparatively low, amounting to not more than 3 per cent, and the steam consumption is low also. For instance, for the 14,000 horsepower engines, with 240 pounds steam pressure, 120° Fahrenheit superheat and 26 inches vacuum, the steam consumption is nine pounds per indicated horsepower. These 14,000 horsepower engines have four cylinders, and therefore are quadruplex engines. However they are not quadruplex expansion engines, as the steam does not pass from one cylinder into the other as in the old compound engines.

In Europe the unaflow engine is also applied to large locomotives. The A. Borsig Works, Berlin, in 1920, constructed the first locomotive of this kind for the German state railway, and to-day there are more than 200 unaflow locomotives in operation in Europe. The one great advantage in the unaflow locomotive over the counterflow type, is that with a lower steam pressure and lower degree superheat the same power is developed that is developed in a counterflow locomotive with higher pressure and higher superheat. If the same pressure and the same superheat is used in both types of engines, then the unaflow engine will develop 26 per cent more power, and it is expected that still greater gains will be made in future developments. This gain is caused by the elimination of the initial condensation in the unaflow cylinder.

FRANK KOESTER,
Consulting Engineer.

ENGINES, STEAM, GAS, AND WATER, Manufacture of. According to a report of the Department of Commerce, there were 296 establishments engaged primarily in the manufacture of engines in the United States in 1921, which turned out products valued at \$199,499,000. These figures compare with products valued at \$464,775,000 turned out by 348 establishments in 1919 and products valued at \$72,121,000 turned out by 375 establishments in 1914. In addition, establishments engaged primarily in other lines of manufacture, reported the production of engines valued at \$27,916,000 in 1921, \$115,259,000 in 1919 and \$39,421,000 in 1914. These figures relate only to engines and tractors produced for sale as such, and do not include the engines used in automobiles and trucks when produced by the builders of those vehicles. The

total number of engines turned out was, in 1921, 399,856; in 1919, 836,206; in 1914, 418,526. Of the engines manufactured in 1921, 3,617 belonged in the stationary class (not turbines), 978 were portable (not automobile); 2,016 were stationary turbines; 1,687 were marine (not turbines); 34 were marine turbines while other steam engines manufactured numbered 228. Internal combustion engines manufactured numbered 159,592 automobile engines, 927 Diesel type engines, 18,640 marine engines, 105,317 stationary engines, 11,332 portable engines, and 18,132 other internal combustion engines. Farm tractors manufactured during the year numbered 68,403; road and other tractors numbered 5,963, while waterwheels, motors and turbines numbered 2,990. Persons engaged in the industry, including proprietors, firm members, salaried employees and wage earners numbered 43,726 in 1921 as compared with 96,286 in 1919 and 36,303 in 1914. Salaries and wages paid totaled \$72,260,000 in 1921; \$136,347,000 in 1919 and \$28,586,000 in 1914. Materials used cost \$111,698,000 in 1921; \$217,551,000 in 1919 and \$31,460,000 in 1914. The value added by manufacture (that is, value of products less cost of materials), was \$87,801,000 in 1921; \$247,224,000 in 1919, and \$40,661,000 in 1914. Twenty-seven establishments which turn out products valued at less than \$5,000 each produced engines valued at a total of \$66,600 in 1921.

ENGLAND. See GREAT BRITAIN.

ENGLAND, CHURCH OF. See PROTESTANT EPISCOPAL CHURCH.

ENTOMOLOGY. See ENTOMOLOGY, UNITED STATES BUREAU OF.

ENTOMOLOGY, United States Bureau of. The Bureau of Entomology is charged with investigations of the insects that are injurious to agriculture directly and indirectly. In a broad way, the Bureau studies all insects in their relations to man and covers a very large field in its work. In its organization it is directed by a chief and two associate chiefs, and is divided into sections according to the character of the crops or products injured. There is thus a section for the insects that affect fruit trees, another for insects affecting cereal and forage crops, another for insects affecting truck crops, another for stored products, another for southern field crops, and so on. Each of these sections has a leader and a body of trained scientific assistants. The main work of the Bureau is done in field laboratories, the Washington offices being mainly for administration. There are 75 of these laboratories scattered all over the country, each one being situated at the center of some great problem of insect damage. The Bureau has grown during the last 40 years to a commanding position in applied entomology, and the United States service in this direction is far stronger than that of any other country. All of the investigations of the Bureau, however, are conducted in co-operation with the agricultural colleges and experiment stations of the different States, and these latter organizations depend upon the Federal Bureau for assistance in certain directions, notably for the identification of insects, since the Bureau has on its staff a large number of trained specialists and has in Wash-

ington the enormous collections of the United States National Museum close at hand. In fact, the division of insects of the national museum is largely manned by experts of the Federal Bureau of Entomology. The work of the Bureau for the year 1922 covered, as usual, a very large number of projects, but there are certain ones of prime importance about which some details should be given.

The Japanese Beetle.—This is an extremely destructive insect which made its appearance a few years ago in northwestern New Jersey not far from Camden. It has gradually spread in spite of all efforts to hold it by quarantine and inspection, and now threatens to be a pest of national importance. It feeds upon the foliage of all sorts of trees, and in its larval stage feeds underground upon the roots of grass and other plants. During the season, all vegetable products, especially sweet corn, coming from the infested district were inspected. More than 205,000 baskets of corn were inspected and more than 5,000 beetles were removed from the tips of the ears. Scouting work shows the limits of the infestation for 1922 to cover about 1,000 square miles in New Jersey and 57 square miles in Pennsylvania. Biological studies of the insect have been carried on, and investigations of insecticides and methods of control have been made. These investigations have included the treatment of the grubs in the soil, the use of poisons and repellents sprayed on foliage, and the destruction of the grub by agricultural methods. Experts sent to Japan last year have been studying the parasites of the insect in its native home, and large numbers of these parasites have been imported. These have been propagated in New Jersey, and large numbers will be liberated next spring.

The European Corn-borer.—The European corn-borer, originally discovered in eastern Massachusetts and later in the vicinity of Schenectady, N. Y., and still later near Buffalo, N. Y., and in 1921 in small numbers in Michigan and Ohio along the south shore of Lake Erie, made no notable western spread during the year. In New England, it has reached central New Hampshire and entered Maine and Rhode Island, and in western New York has made some spread to the eastward. Over in lower Ontario it made a very considerable spread. A laboratory of the Bureau has been established at Sandusky, Ohio, in order to study the insect in its new environment. No commercial damage has become apparent in Ohio, but it is feared that if the insect is not kept in check it will spread into the main corn belt and become a very serious pest. The spread in eastern New York has been slight, and damage to the corn crop has also been slight. In Massachusetts, however, where the insect has two broods each year as contrasted to a one-brooded condition for the west, the insect has done very considerable damage to garden crops in general and especially to celery, beets and beans. It has multiplied enormously and infests the weeds in waste areas to an extraordinary degree. Research work conducted mainly at the field laboratory in Arlington, Mass., has been vigorously pressed in the effort to find out practical means of control. This work indicates that the methods adopted will have to be chiefly changes

in finer details of agricultural practice and in the consumption of the infested crops in such a way as to destroy the insects. Extensive work in the introduction of the European natural enemies of the corn borer has been carried on, and more than a million individuals of a single promising species of a parasite have been liberated in Massachusetts during the past summer. These came from a laboratory which has been established at Hyères, France, in charge of a very competent expert. Several additional insect parasites have been discovered which, it is hoped, will help to lessen the numbers of the corn-borer in America.

The Cotton Boll Weevil.—Excellent progress has been made in the control of the boll weevil by the calcium arsenate dust. Very many planters have used this process with profitable results during the year and it has been constantly simplified and cheapened and adapted to different regions. Experiments have been made in the use of the airplane which show that in this way the amount of the poison can be cut in half and indicate the possible use of this instrument for dusting on large plantations or in regions of almost continuous cotton culture and suggests that it may come into play in community service. The general feeling throughout the regions where the boll weevil has been present for several years is one of encouragement, and it has been shown in many cases that, by the application of the cultural methods recommended by the Department, even the small planter with comparatively poor soil may raise cotton under boll weevil conditions at a profit. Just at the close of the year, the Florida Experiment Station (a State institution, not connected with the Federal Bureau) issued a bulletin indicating a cheap means by which upland cotton may be grown in Florida under boll weevil conditions by the small planter and on comparatively poor land. This method promises to be of great importance.

The Mexican Bean Beetle.—This insect, first reported in Alabama in 1920, has since invaded Georgia, Tennessee, Kentucky, Virginia and the Carolinas, and is still spreading. Intensive work on methods of control were carried on during the year, as well as biological studies. A perfectly satisfactory method of control has not yet been reached. An expert has been studying the insect in Mexico and has secured a promising parasite which has been imported into this country. Efforts will be made to colonize it during next year.

Gipsy Moth and Brown-tail Moth.—The Federal bureau has, during the past few years, confined its attention towards preventing the spread of these two insects, their control in the interior of New England being left to the respective States. A number of smaller colonies have been found in New York, New Jersey and Pennsylvania, and these have been exterminated. A very large colony was found a year or so ago in New Jersey, and an effort is being made to wipe it out. The work of the past season has been apparently very successful, and it seems altogether likely that, by the combined efforts of the State and Federal government, this very dangerous colony will be exterminated. In the meantime, the gipsy moth, in spite of all efforts, is now approaching the Hudson River

valley on its western range, and the efforts of the government and of the State of New York have been during the past season, and will be during the next season, concentrated on this advance line. Some years ago a number of effective parasites were imported from Europe and Japan and have been established in New England, and these assist in reducing the numbers of the gipsy moth very considerably. During the past summer one expert was sent to Europe and another to Japan, with the idea of trying to secure additional parasites of species which in their work will supplement that done by those imported earlier.

The range of the brown-tail moth in New England, contrary to the case that exists with the gipsy moth, has been retreating, and 2,342 square miles of territory formerly occupied by this insect have been relieved from quarantine. This is due in part to the general application of measures recommended by the bureau and by the different States, in part to the work of parasites imported from Europe during the years 1905 to 1911, and in part to disease.

Other investigations.—In addition to the main pests mentioned above, notable progress has been made in the campaign for the suppression of the plum curculio in the Georgia peach belt, and also in North Carolina. The use of paradichlorobenzene for the control of the peach-borer has become quite general among commercial peach orchardists and has resulted in large savings in the cost of control of this insect. Many practical points have been discovered in the work on the codling moth in the Pacific northwest. A new spray has been developed for the San José scale which is especially applicable in the Ozark region of Missouri and Arkansas as well as in southern Illinois and Indiana. This consists of a two-per-cent engine oil thoroughly emulsified with potash-fish-oil soap and is used as a dormant treatment for the scale, costing about one-half less than the standard lime-sulphur wash.

Studies of the sorghum midge, the so-called green bug of cereal crops in the southwest, and of the Hessian fly, have been continued with excellent results. Grasshopper investigations were carried on in Wyoming, Montana and North Dakota, as well as in Oregon, California, Arizona and Texas. Further progress was made toward the control of the alfalfa weevil by a method of dusting with arsenicals which promises simpler and cheaper control. Work has been continued with tobacco insects, including the horn worm, flea-beetle, bud worm and tobacco thrips, and also with sugar cane insects. In forest insect control, a very striking co-operative bit of work has been carried on in the northwest against the yellow pine bark beetle. In this work the Forest Service, the National Parks Service, the Office of Indian Affairs and associations of private owners have co-operated, and during the spring of 1922 control work was carried on in the Klamath region of Oregon which promises to give results of great value. The work on the sweet potato weevil eradication has been continued in Florida, Georgia, Alabama and Mississippi, with very favorable results in the first three States. In Mississippi, however, a number of new infestations have been reported. The pea aphid, which

has become a serious pest in recent years, especially in New York, California and Wisconsin, on cannery peas, has been intensively studied, and there is every prospect of the working out of a cheap and satisfactory method for its control. A newly imported potato and tomato weevil has made its appearance in Mississippi and is being intensively studied.

The experts engaged in the investigation of insects affecting stored products have been at work upon the insects attacking wheat, corn and other grains in farmers' bins, warehouses, grain cars, ships and elevators. Intensive studies have been made of the Angoumois grain moth, or fly weevil, that has done much damage to the 1922 crop of winter wheat in the eastern States. Investigations have been carried on in co-operation with the bureau of chemistry to discover a more satisfactory fumigant for grain cars, and studies have been made of weevils attacking beans, peas and cowpeas in storage. Insects affecting fabrics made of wool, hair, furs and feathers have been studied. Many important studies have been continued with reference to bee culture, all the problems of importance to practical bee-keeping being borne in mind.

L. O. HOWARD,
Chief of Bureau.

ENVER PASHA. Turkish soldier. About the birth and death of Enver Pasha, there is still some uncertainty of detail. Apparently, he was born at Stamboul, in 1882. His father was a Turk; a woodturner who was as popular with Abdul Hamid as locksmiths were with Louis XVI; and his mother was an Albanian of whose race Byron wrote "where is the foe that ever saw their back" adding, in grim prophecy of Enver, "their wrath, how deadly." At Stamboul, Enver attended the Hassan Aga Medressa School, but he completed his education at Monastir. Like Kemal, he is thus to be regarded as essentially a Macedonian or European Turk, a small dapper man, with mild gentle eyes and the complexion of a Levantine girl, he may have had in his pedigree a Hungarian strain. It was when aroused that his mild disposition turned to flame. As a youth, he traveled in Europe and India. He entered the army as a cavalry officer in the Damascus corps and joined the Committee of Union and Progress. Those were days when Hilme Pasha was endeavoring to crush revolutionary bands in the mountains, who entered what was then Turkey across the Bulgarian frontier. Enver, then a major, became his aide-de-camp. Rumors reached the Sultan Abdul Hamid that there was disaffection among the second and third army corps, stationed in Macedonia, and Hilmi was urgently invited to Constantinople, there to be lulled into loyalty or, if this failed, to disappear. Instead of joining the Sultan's personal suite at Yildiz Kiosk and possibly marrying his niece, Enver took to the hills and, with the army behind him, "precipitated the movement." He telegraphed the Sultan, that no taxes would be paid and that the standard of revolt would be raised unless the delayed constitution was exactly and immediately granted. The revolution followed, Enver's attitude at that time being declared thus: "We are all brothers, Arbitrary govern-

ment has disappeared. Under the same sky, we are all equal. We all glory in being Ottomans." Between Moslem and Christian, between Turk, Greek and Armenian, there was to be one common citizenship. The Sultan's revenues were cut from \$7,500,000 to \$3,000,000 and his Mesopotamian properties were confiscated. But Enver's personal reward was slight. For eight months, he was merely military attaché at Berlin. It was the appointment that he himself selected. With Britain virtually allied with Russia, and a German ambassador so astute as Baron Marschall von Bieberstein at Constantinople, it is no wonder that the Young Turks, Enver included, became pro-German. When the Sultan tried to destroy the constitution, Enver was among the leaders who dethroned him and sent him to Salonica. In the Italo-Turkish War, Enver dodged the Italians at sea and the Egyptian authorities on land, so reaching Tripoli where he led the forlorn hope for Turkey. After the Second Balkan War, it was Enver who entered Adrianople in triumph.

In February 1913, Enver, by a bloody coup d'état, seized the supreme power as Minister of War. It was he who threw in Turkey on the German side, winning at first a measure of success against the British-Australians in the Gallipoli Peninsula and against the Russians in the Caucasus. But his plunge utterly ruined the Ottoman Empire. Whatever went right for Turkey was attributed to Von Der Goltz, the German field marshal, and the other German advisers. Whatever went wrong, was Enver's fault. Largely in order to pacify critics, it was said that Enver ordered the massacre of 1,000,000 almost entirely unarmed Armenians while an immense number of Christian women, many of them educated in American missionary institutions, were enslaved. With the collapse of Turkey, Enver was recognized as a war criminal who had incurred grave guilt. With his colleagues, Djemal and Talaat, he was condemned to death for high treason. Of the three men, Talaat was shot in Berlin by an Armenian; Djemal was pursued to Afghanistan and there done to death; and Enver alone was left. All kinds of stories were current as to his fate. He had escaped by aeroplane to Moscow. He had been seen in Berlin. He had again quarreled with Kemal in Anatolia. What may be taken as certain is that he made his way somehow into Turkestan, possibly as an agent of the Soviets. There, however, he turned against the Russians, who are the hereditary foes of the Turks and developed a Pan-Turanian ambition. His idea was to gather up the moslems of mid-Asia and so recover the Ottoman Empire. Kemal was against him; so was Moscow; and on 25 July 1922 he met his end near Raljiwan in Turkestan where his forces, reduced to 1,000 men, were fighting a superior contingent of Bolsheviks. It is said that Enver fell, saber in hand, pierced by five bullets.

EPIDEMIOLOGICAL INTELLIGENCE SERVICE, International. See ROCKEFELLER FOUNDATION.

EPIRUS, a district of the kingdom of Greece comprised in the Departments of Janina and Prevesa. The population in 1920 was 213,276. The boundary with Albania is ill-defined.

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPWORTH LEAGUE. See METHODIST EPISCOPAL CHURCH, SOUTH.

ERITREA, a colony of Italy consisting of eight commissariats on the African shores of the Red Sea. The total area is 46,500 square miles and the population numbers 400,000. There are about 138 officers and 5,457 men in the military forces, nearly all Italians. The central government is represented by a civil Governor nominated by the King and under the supervision of the Minister for the Colonies. The total revenue from all sources in the fiscal year 1921-22 was 25,044,000 lire, balanced by an expenditure of the same amount. Camels, oxen, sheep, goats, are pastured in the lower zone. Hides, butter, and meat are the chief articles of local trade. The pearl fisheries are important, the value of the pearls recovered annually amounting to 250,000 lire and the mother of pearl to 800,000 lire. Palm nuts are exported. Gold is worked in the Hamasien district and petroleum has been discovered. Asmara, the capital of the Colony, is connected by railway with Massawah, a distance of 74 miles; other branch lines are under construction. A wireless station at Massawah maintains communication with the Italian station at Coltano. There are 12 post offices in the Colony and 863 miles of telephone lines and 514 miles of telegraph lines. The Governor in 1922 was Marquis G. Cerrina Feroni.

ERSKINE COLLEGE, a co-educational institution, belonging to the Associate Reformed Presbyterian Church, founded in 1837 and located in Due West, S. C. In 1922-23 it had a faculty of nine members, 141 students, property valued at \$500,000, and an income of \$50,000. R. C. Grier, is president.

ESMOND, Henry V., English actor and dramatist: b. Hampton Court, England, 30 Nov. 1869; d. Paris, France, 17 April 1922. He was the fourth son of the late Dr. R. G. Jack and was educated under private tutors. Under the name of Esmond he appeared on the stage at the old Princess Theatre, Oxford Street, in 1886 as "Grandfather Corby" in 'The Noble Vagabond.' During his early years he appeared with Wilson Barrett, E. S. Willard, Edward Terry, and George Alexander, gaining valuable experience with each. He achieved his first pronounced success in London in 'The Middleman,' in which Miss Eva Moore, whom he married in 1891, was also playing. His second great success was made in Pinero's play 'The Times.' He appeared at Saint James Theatre in 1893 and acted there for many years, scoring another success as 'Cayley Drum-mle' in Pinero's 'The Second Mrs. Tanqueray.' This latter performance established his position on the London stage. He achieved another conspicuous success in 1895 as "Little Billee" in 'Trilby.' As an author he produced plays which were both artistic and popular successes. The list includes 'Rest,' 'Bogey and The Divided Way,' 'One Summer's Day' (1897); 'Grierson's Way' (1899); 'The Wilderness' (1901); 'When We Were Twenty-one' (1901); 'The Sentimentalist,' 'My Lady Virtue' (1902);

'Billie's Little Love Affair' (1903); 'The O'Grindles' (1907); 'Under The Greenwood Tree' (1907); 'A Young Man's Fancy' (1912); 'Eliza Comes To Stay' (1913); 'The Dangerous Age' (1914); 'A Kiss or Two' (1917); 'The Law Divine' (1918); 'Birds of a Feather' (1920). He appeared himself in 'Eliza Comes To Stay' at the Criterion Theatre production in 1913 and afterward when the play was produced in New York City. He made a second visit to America in 1921.

ESTHONIA, a republic comprising the former Russian government of Estland, the northern part of Livland, part of the Pskoff government, and the islands Oesel, Dago and Muhumaa in the Baltic Sea. Its area is about 23,160 square miles. The population is 1,750,000, of whom 94 per cent are Esths and about five per cent Russian. Esthonian is the language of the people but Russian and German are also in very general use. The capital is Reval (Tallinn), with a population of 160,000. About 85 per cent of the population are Lutheran. There is no state church. Primary education is free and compulsory. The percentage of illiteracy is very low, being about three per cent of the population above school age. There are in the republic 1,257 primary schools and 300 secondary schools. There are also numerous professional schools, agricultural, commercial, etc. There is a university at Dorpat (Tartu). Agriculture is the principal occupation of the people. Rye, wheat, potatoes and barley are the principal crops. The large landed estates are now parcelled out to the peasants under the Agrarian reform act of 1919. There were 414,955 cattle, 497,838 sheep, 244,912 swine and 155,489 horses in the republic in 1922. The republic exports flax, timber, meat and cellulose. The value of the exports in 1921 was \$14,667,680. The same year the imports were valued at \$17,500,000. Imports were chiefly salt, coal, fertilizers, sugar and oil and oil products. Articles declared for export to the United States in 1922 were valued at \$813,193 compared with \$180,194 in 1921.

Government.—Esthonia declared her independence in February 1918 and was soon after recognized as a de facto government by the Allied powers and in 1921 was accorded de jure recognition by the supreme council of the League of Nations. The constitution went into effect 20 December 1920. Sovereign power rests in the hands of the people who exercise it through a state head and nine ministers and an assembly of 100 members elected by universal and direct suffrage. The initiative and referendum are fundamental provisions of the constitution. The ministers are chosen by the assembly and are responsible to it. All citizens are equal before the law and the death penalty has been abolished. The national flag is blue, black and white in horizontal stripes. The state head or Riigivanem in 1922 was Konstantine Paets and the minister for foreign affairs Antone Piip.

ETHNOLOGY. See ANTHOPOLOGY.

ETHNOLOGY, American Bureau of. See SMITHSONIAN INSTITUTION.

EUREKA COLLEGE, a co-educational institution, affiliated with the Disciples of Christ,

founded in 1855 and located at Eureka, Ill. In 1922-23 it had a faculty of 23 members, 325 students, property valued at \$345,000, and an estimated income of \$75,000. L. O. Lehman, LL.D., is president.

EUROPEAN CORN-BORER. See CORN-BORER, EUROPEAN.

EUROPEAN COUNTRIES, Budget Deficits of. Below is presented in tabular form the budget deficits of the principal European countries for the years 1920 and 1921, together with the estimated deficits for the years 1922 and 1923.

Of the six great powers of Europe, above enumerated, three are so completely submerged in bankruptcy that it is scarcely worth while to attempt to furnish figures, expressive of their finances. These powers are Russia, Germany and the disintegrated Austria-Hungary. In the cases of France, Great Britain and Italy, there remains intact the fabric of an ordered revenue and expenditure. In Russia, the gold ruble is worth 51.46 United States cents or roughly half a dollar. In 1913, the paper currency amounted to 1,775,000,000 rubles and the gold or equivalent guarantee was 1,695,000,000 rubles, or almost ruble for ruble of paper. On 1 July 1922—just 10 years later—the paper circula

(Based on official returns and current press reports for later years)

(000 omitted)

	Financial year ends	Unit of currency	Financial years		Estimates for 1922	Estimates for 1923
			1920	1921		
Austria.....	June 30	Crown	*10,580,000	150,500,000	210,000,000	5,294,000,000
Belgium.....	Dec. 31	Franc	5,600,000	4,570,000	1,142,000	2,394,000
Bulgaria.....	Mar. 31	Lev	No data	343,000	1,600,000	.....
Czechoslovakia.....	Dec. 31	Crown	*25,000	3,060,000	No data	559,000
Denmark.....	Mar. 31	Krone	37,000	105,000	150,000	.....
Finland.....	Dec. 31	Finmark	89,000	177,000	No data	500,000
France.....	Dec. 31	Franc	5,600,000	2,900,000	*1,650,000	2,000,000
Germany.....	Mar. 31	Mark	32,100,000	49,100,000	445,100,000	7,100,000,000
Greece.....	Mar. 31	Drachma	401,000	980,000	No data	.....
Hungary.....	June 30	Crown	9,680,000	9,470,000	20,200,000	.....
Italy.....	June 30	Lire	14,100,000	10,700,000	6,250,000	4,000,000
Jugo-Slavia.....	Dec. 31	Dinar	1,870,000	2,080,000	2,130,000	.....
Netherlands.....	Dec. 31	Florin	370,000	190,000	246,000	.....
Norway.....	June 30	Krone	67,000	82,000	No data	.....
Poland.....	Mar. 31	Mark	*54,000,000	161,000,000	133,000,000	.....
Portugal.....	June 30	Escudo	80,000	81,000	260,000	500,000
Rumania.....	April 1	Leu	No data	No data	*4,000,000	.....
Russia.....	Dec. 31	Ruble	.....	.....	*230,000	(*)
Spain.....	Mar. 31	Peseta	52,000	799,000	1,300,000	427,000
Sweden.....	Dec. 31	Krone	109,000	209,000	No data	.....
Switzerland.....	Dec. 31	Franc	99,000	133,571	100,000	.....

* Fractional year. † Estimate. ‡ Nine months of 1922; in gold rubles. § Deficit estimate for France in fiscal year 1923, 4,000,000,000 francs, exclusive of reconstruction estimates dependent upon German reparation payments. ¶ Dispatches from Berlin on 28 July 1922 state that the Russian budget commission puts the deficit for 1923 at 4,000,000,000,000 rubles; later reports indicate a much larger figure.

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EUROPEAN COUNTRIES, Note Circulation, etc. See table on page 291.

EUROPEAN DEBTS. Before she destroyed herself by war, Europe was, by tradition, by education, by finance, by military, naval and political influence, the headquarters of modern civilization. The sovereignty of Europe was vested in six great powers—Austria-Hungary, France, Germany, Great Britain and Italy, and in 14 smaller states, with Turkey holding Constantinople. Certain of the Balkan countries, like Turkey, had their financial difficulties, but of Europe as a whole, it may be said that she was solvent, that her currencies were based on the gold standard, and that, despite military and naval expenditure which led to frequent deficits in budgets, she was increasing in wealth and comfort. That was in 1913, only a brief 10 years ago. But in the interval, the European system has been utterly shattered and, unbelievable as it seems, the credit of the continent, taken as a whole, does not compare with the credit of Latin-America or of India.

tion was 271,236,000,000,000 rubles or, to put these gigantic figures more plainly, 1½ billion rubles had been inflated to 271,236 billions or multiplied 180,000 times. On 31 Aug. 1922, the paper rubles in circulation were 700,000,000,000,000 or 700,000 billions, that is three times the figure for June. By the end of October, the figure had reached 1,182,000 billions. In 1921, a gold ruble was worth, on the average, 80,000 paper rubles, but in September 1922, the official quotation was 3,500,000 paper rubles while the unofficial rate of exchange was 5,500,000 paper rubles. This means 11,000,000 rubles to the United States dollar and 50,000,000 rubles to the British sovereign sterling. In October, rubles fell yet further to 20,000,000 for a dollar, at which point the Soviet government took certain measures. On the 12th of that month, the state bank was authorized to issue a new kind of gold ruble bill, of denominations, 10, 20, 30, 50, 100, 200 and 500, which would be backed by 25 per cent of precious metals, foreign currency and bills of exchange. These securities would be (continued on page 292)

EUROPEAN COUNTRIES

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EUROPEAN COUNTRIES. Note Circulation and Gold Reserves of Banks of Issue. Below is presented in tabular form the note circulation and gold reserves of the principal countries of Europe for the years 1914, 1919, 1921 and 1923.

(000 omitted)

NOTE CIRCULATION AND GOLD RESERVE OF THE BANKS OF ISSUE OF THE PRINCIPAL EUROPEAN COUNTRIES 1914-23

Unit	1914		1919		1921		March, 1923	
	Note circulation	Gold	Note circulation	Gold	Note circulation	Gold	Note circulation	Gold
Austria — Austrian Bank	13 137,700	1,194,000	137,106,983	238,950	442,394,503	4,118	4,162,000,000	49,306
Belgium — National Bank	934,150	322,650	4,697,000	1,364,000	9,082,815	266,500	6,902,000	266,000
Bulgaria — National Bank of Bulgaria	165,120	7,323	3,013,000	36,984	10,594,276	No data	3,950,000	159,500
Czechoslovakia — Bank of Czechoslovakia Rep.	157,266	76,644	435,670	186,870	1,094,049	227,572	8,982,000	1,743,000
Denmark — National Bank of Denmark	123,941	35,091	973,574	42,637	1,350,000	342,493	478,000	228,335
Estonia — Bank of Estonia	5,811,875	3,730,000	36,655,000	1,443,174	1,443,174	42,626	1,300,000	425,960
Finland — Bank of Finland	2,013,800	1,313,240	28,492,000	1,103,000	38,741,680	42,626	1,336,412	42,626
France — Bank of France	10,257,000	No data	1,367,500	1,589,775	71,114,511	1,091,577	37,114,000	3,635,000
Germany — Imperial Bank of Germany	(14)	(14)	(14)	(14)	1,579,509	1,447,677	8,871,750,000	1,004,000
Greece — National Bank of Greece	1,556,925	1,221,875	13,854,000	1,235,500	14,483,451	No data	4,327,000	1,351,187
Hungary — Hungarian Bank	316,632	163,092	995,715	631,577	3,697,458	822,000	14,231,000	15,138
Italy — Bank of Italy	113,484	44,224	428,750	148,253	1,043,276	610,976	5,301,000	875,900
Jugo-Slavia — National Bank of Serbs, Croats, etc.	10 113,383	8,508	10 203,500	9,100	74,087,403	13,135	360,000	635,889
Netherlands — Netherlands Bank	762,350	301,240	4,268,863	8,500	633,225	147,292	1,177,332,000	147,292
Norway — Bank of Norway	1,901,550	521,775	2,987,000	999,534	11,005,085	8,576	1,047,000	41,900
Poland — Polish National Bank	226,555	104,918	3,635,000	2,406,000	4,224,875	493,722	15,481,000	8,577
Portugal — Bank of Portugal	225,925	171,175	687,231	300,266	632,619	2,481,748	4,067,000	2,523,000
Roumania — National Bank of Roumania	1,250	No data	893,496	465,875	921,139	281,748	594,000	274,000
Spain — Bank of Spain	29,300	40,200	70,306	79,110	150,000	No data	84,000	541,000
Sweden — Bank of Sweden			323,240	28,500	128,500	128,300	150,000	No data
Switzerland — Swiss National Bank					335,879	28,500	281,900	27,000
Turkey — Governmental issue								
United Kingdom — Bank of England								
United Kingdom — Currency note issue, Gov.								

¹ Gold and silver balances abroad, etc.

² "Cash"

³ Includes holdings abroad.

⁴ Exclusive of 20,000,000,000 notes of Austro-Hungarian Bank.

⁵ Exclusive of 230,000,000 rubles, and 600,000,000 finmarks.

⁶ Exclusive of 12,000,000,000 crowns of Austro-Hungarian Bank notes.

⁷ Exclusive of about 2,000,000,000 lire issues of other banks and government notes.

⁸ 1913.

⁹ Estimated.

¹⁰ Gold is exclusive of amount held abroad.

¹¹ Austro-Hungarian Bank (includes Austria and Hungary)

¹² See Austria for 1914 and 1919.

¹³ Includes "gold and balances abroad."

NOTE.—The currency notes of Russia in 1917 aggregated approximately 17,500,000,000 rubles with a gold reserve of about 1,250,000,000 rubles. Associated Press dispatches from Moscow in January, 1922, quote the Commissar of Finance, M. Krestinsky, to the effect that the paper issues of the Soviet Government to the end of 1920 aggregated 1,142,000,000,000 rubles, the number issued in 1921 10,000,000,000,000. The London Economic Review puts the total currency of Russia on 31 Dec., 1922, at 450,000,000,000,000 rubles. The Soviet circulation 31 Dec. 1922 was 40 times as much as one year earlier; the German mark circulation in March 1923 was 35 times as much as one year earlier, and that of Austria 18 times as much.

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available for an issue of 500,000,000 rubles or \$250,000,000. This is an attempt by the Soviet government to return to a gold basis and it implies a surrender of Bolshevik economic theory. But the obliteration of the paper ruble, inherited from the Czardom, implies the total loss of all the national and private securities which were based on that currency. The war loans to Russia were \$2,734,000,000 by Great Britain and \$1,092,000,000 by France. Pre-war investments in Russia by France are estimated at \$3,000,000,000. Belgium has also lent large sums to Russia all of which are to be regarded as now irrecoverable. A default on such a scale is, of course, without parallel in Europe. At two gold rubles to the dollar, the budget of Russia in 1913—the last normal year—was:

Expenditure:		
Ordinary.....	\$1,493,000,000	
Extraordinary.....	110,000,000	
		\$1,603,000,000
Revenue.....		1,589,000,000
Deficit.....		\$14,000,000

The Soviet budget for the months January to September 1922, was:

Expenditure.....	\$566,000,000
Revenue.....	496,000,000
Deficit.....	\$70,000,000

It will thus be seen that the Russian budget calculated in gold would, if worked out for the whole year, amount to about half the budget in 1913. In Germany, also the collapse of credit, as measured by currency has been sensational. On 15 Dec. 1922, the banks held a sum of 1,004,846,000 marks in gold, or approximately \$250,000,000. The circulation of notes on that date was 969,620,766,000 marks, and this figure, a few days later, passed into a trillion or above the thousand billion limit. This means that for every mark in the gold reserve, there had then been issued 1,000 paper marks. With the occupation of the Ruhr Valley, the mark fell at once to 20,000 per dollar. Since then it has fallen below 40,000 to the dollar. It is estimated that, since 1919, Germany sold 80,000,000,000 marks to private speculators in the United States, for which paper \$960,000,000 were paid. (New York *World*, 3 Oct. 1922.) This investment must be reckoned an almost total loss, being worth, on 3 Feb. 1923, only \$2,000,000 or less than one-quarter of 1 per cent of the money risked. By cable (20 Dec. 1922, New York *Times*) figures of the estimated German budget for 1923 are furnished. The ordinary budget balances at 732,000,000,000 marks. The extraordinary budget shows an expenditure of 84,500,000,000 marks and revenue of 18,700,000,000 marks, showing a deficit of 65,800,000,000 marks. A further 449,000,000,000 marks was held to be due under the peace treaty and there were 206,400,000,000 marks to be found somehow for other items. The total German deficit for 1923, as then estimated, was thus to be 721,200,000,000 marks. On 3 Feb. 1923, that huge figure only represented the absurd sum of 18,000,000 gold dollars. But it may be assumed that all estimates of the German budget, made in advance of the occupation of the Ruhr are valueless.

In the case of Russia and still more in the case of Germany, the financial collapse, while destructive of the propertied classes, has not meant so complete an industrial disaster, as was at first thought to be inevitable. In Germany, at any rate, the constant rise in prices stimulated domestic trade. On 1 Dec. 1922, manufactured articles cost 1,184 times as much as before the war; and textiles and leather, 2,663 times. But on 30 Dec. 1922, the London *Economist* stated that "the condition of industry and trade (in Germany) has been good." In March 1921, the number of unemployed was 429,000 but in 1922, it fell to under 12,000. In the case of shipping, Germany has repurchased from the Allies 130 vessels, of a total 491,567 gross tons, or 10 per cent of her war losses. It is calculated that Germany's internal war-debt was 157,000,000,000 marks. The fall in the mark has reduced this war-debt to less than \$4,000,000 gold. In other words, it has been wiped out.

As a great power, Austria-Hungary has ceased to exist and whatever would have been her finances must be considered as part of the finances of the small nations into which the dual empire has been disintegrated. It will thus be seen that European credit, in the larger sense, depends upon three countries, Great Britain, France and Italy. For three years, Great Britain has balanced her budget, her estimated revenue for the current 12 months,—March to March, 1922–23, being £910,775,000. On 31 Dec. 1919, the British debt was £7,998,000,000. On 31 March 1922, the debt had been reduced to £7,654,500,000, that is by £343,500,000, an achievement to some extent assisted by the sale of war stores. On 31 Dec. 1922, the debt had been increased nominally by certain conversions into new bonds to £7,768,000,000 but the floating debt, consisting of temporary advances, and treasury bills had been reduced during 1922 from £1,259,840,000 to £941,051,500, a relief to the money market of no less than £318,788,500. On 3 Feb. 1923, therefore, Sterling exchange had risen to \$4.65 to the sovereign, which compares with \$4.86½ par.

The French budget for 1922 was:

Expenditure:	Francs
Ordinary.....	28,348,952,965
Extraordinary.....	10,558,534,377
	38,907,487,342
Revenue.....	28,362,328,929
Estimated deficit.....	10,545,158,413

On 1 Jan. 1922, the French treasury had disbursed 80,000,000,000 francs on reconstruction of devastated provinces and similar services, chargeable against Germany. During 1922, the extraordinary expenditure, stated above, brought up this figure to 90,000,000,000 francs—if, that is, the money appropriated was actually spent. The charge for interest on reconstruction advances is approximately 5,000,000,000 francs and is met at present by the French treasury. There is, it is to be feared, little likelihood of Germany relieving France of this liability and M. de Lastyrie, the finance minister, has announced a general increase of taxes by 20 per cent with a view to balancing the budget during 1923. On 3 Feb. 1923, the franc stood at 6.17 cents

EUROPEAN DEBTS

which compares with 19.3 cents normal. The franc has thus fallen to one-third of its par value. The debt of France on 31 March 1922 was:

	Francs
Internal.....	155,058,325.853
Floating.....	87,050,312.100
Foreign.....	74,876,351.000

316,984,988.953

At normal exchange, this amounts to \$60,000,000,000. With the franc, depreciated, the equivalent figure to-day would be more, nearly \$30,000,000,000. It should be borne in mind that the foreign obligation is payable, not in paper but in gold, and must be still calculated at par. The budget of Italy for the year 1922-23, stated in lire, was:

Expenditure.....	20,454,809,000
Revenue.....	17,602,957,000
Deficit.....	<u>2,851,852,000</u>

The lira, like the franc, is worth 19.3 cents, but on 3 Feb. 1923, the quotation was only 4.80 cents, or one-quarter the par value. It will thus be seen that with the franc at one-third its par value and the lira at one-quarter its par value, there is no convenient currency available in France and Italy whereby large payments might be made to the United States on account of loans due to her. The only large European debt, therefore, that has been funded up to the present is the British to the United States. On 15 Nov. 1922, the debts due to the United States from foreign powers amounted to:

nations, but certain interest charges had been met. On loans under the Liberty Bond Acts, interest has been paid as follows:

Belgium.....	\$10,907,281
Cuba.....	1,859,733
Czecho-Slovakia.....	304,178
France.....	129,570,376
Britain.....	351,657,185
Greece.....	1,159,133
Italy.....	57,598,852
Liberia.....	861
Roumania.....	263,313
Russia.....	7,485,555
Serbia.....	636,059
	<u>\$561,442,550</u>

On loans arising out of sales of war stores, interest had been paid as follows:

Belgium.....	\$4,176,780
France.....	40,898,283
Latvia.....	126,266
Poland.....	1,290,620
Russia.....	50,760
	<u>\$46,542,711</u>

The payments from Russia on account of interest were made out of funds deposited in this country by Russia before the advent of the Bolshevik régime. The British totals, for principal and interest, includes an item of \$61,000,000 due on the advances to India of 200,000,000 ounces of silver, authorized in April 1918 by the Pittman act. By the act of 9 Feb. 1922, Congress appointed a War Debt Funding Commission. Secretary Mellon of the Treasury is chairman and the President nominated also Charles E. Hughes, Secretary of State, Herbert

COUNTRY	Principal	Interest	Total indebtedness
Armenia.....	\$11,959,917	\$1,677,256	\$13,637,174
Austria.....	24,055,708	2,886,685	26,942,394
Belgium.....	377,123,745	60,073,383	437,197,129
Cuba.....	7,740,500	14,404,536	22,145,036
Czechoslovakia.....	91,887,668	2,089,625	93,977,293
Estonia.....	13,999,145	1,012,436	15,011,581
Finland.....	8,281,926	503,386,035	511,667,961
France.....	3,340,746,215	611,044,201	3,951,790,416
Great Britain.....	4,135,818,358	750,000	4,885,818,358
Greece.....	15,000,000	202,300	15,202,300
Hungary.....	1,685,835	284,681,434	286,367,269
Italy.....	1,648,034,050	643,576	1,648,677,626
Latvia.....	5,132,287	3,518	5,135,805
Liberia.....	26,000	747,244	773,244
Lithuania.....	4,981,628		4,981,628
Nicaragua.....	170,585		170,585
Poland.....	135,662,867	17,618,809	153,281,676
Roumania.....	36,128,494	5,864,104	41,992,599
Russia.....	192,601,297	39,712,670	232,313,968
Serbia.....	51,104,595	7,994,087	59,098,683
Total.....	<u>\$10,102,140,829</u>	<u>\$1,554,791,908</u>	<u>\$11,656,932,737</u>

The principal of these debts represent:

Loans under Liberty bond acts.....	\$9,386,311,178 60
Sales of war stores under act of 9 July 1918.....	574,876,884 10
Relief supplies.....	84,093,963 95
United States Grain Corporation.....	56,858,802 55
	<u>\$10,102,140,829 20</u>

On 15 Nov. 1922, no repayment of the principal of the debts had been made by any of the

C. Hoover, Secretary of Commerce, Senator Reed Smoot and Theodore E. Burton of the House of Representatives. The act of Congress stipulated that, on any funding of a debt, interest should be fixed at not less than 4¼ per cent and final repayment made not later than 15 June 1947 — after a term, that is, of 25 years.

During the year a visit was paid to Washington by M. Jean Parmentier, chairman of the French Foreign Debt Commission, but he did

not bring any proposal to fund the French obligations. In November, the United States protested against a proposal by Rumania to contract a new loan, amounting to \$175,000,000, internationally guaranteed, without first arranging with the United States to fund a debt that, with interest, has reached \$42,000,000. A Rumanian debt commission visited Washington, but with no very definite results. In October 1922 Reginald McKenna, the former Chancellor of the Exchequer and chairman of the London Joint City and Midland Bank addressed a bankers' conference in New York and expressed the view that Britain would pay the United States in full but that other European creditors would only meet a fraction of their obligations. In August 1922 Earl Balfour for the British government dealt with the position in an important note. Broadly he urged that all the European debts should be dealt with together; he indicated that Britain was ready for cancellation all round and that, in any event, she would not seek from the rest of Europe any larger sum than she was paying to the United States. To this note, Secretary Mellon gave an answer in which he insisted that each debt to the United States stood on its own footing. A letter was moreover produced (July 1922) in which President Wilson in October 1920 informed Prime Minister Lloyd George that "no power has been given by Congress to anyone to exchange, remit or cancel any part of the indebtedness of the Allied governments to the United States." The only question was thus on what terms the British debt could be funded. Statements, unconfirmed but not denied, have been made that Chief Justice Taft and Ambassador Harvey, when entertained during the summer at luncheon in Downing Street informed Prime Minister Lloyd George and his successor, Bonar Law, that Congress would probably agree to fund the British debt at 2 per cent interest. With some such idea in his mind, Stanley Baldwin, the British Chancellor of the Exchequer visited Washington in January 1923. When terms, so unfavorable as these to the American treasury, could not be obtained, the Chancellor returned to London where the tentative offer of the United States Debt Funding Commission was speedily accepted. By this offer, the British obligations are funded at 3 per cent for 10 years and afterwards at $3\frac{1}{2}$ per cent. The bonds are to be repaid by instalments, beginning at \$23,000,000 a year and rising to \$175,000,000. This means that as the debt is reduced, and with it the charge for interest, the amount of the instalments increase. The burden of the sinking fund is thus spread equally over the term of the obligation. Upon giving 90 days' notice, Great Britain may repay additional amounts of the principal of the bonds. For the first five years, half the interest may be funded and so added to the principal. Payment of interest or principal may be made in United States government bonds, issued since 6 Aug. 1917, such bonds to be taken at par with accrued interest. Up to the date of funding, the interest automatically accruing on the debt was at the rate of 5 per cent. By the offer, it is to be reckoned at only $4\frac{1}{4}$ per cent and Great Britain is to be allowed the advantage of the

difference. The amount of the funded debt, therefore, works out thus:

Principal of debt.....	\$4,135,818,358
Less Pittman silver advances.....	61,000,000
	\$4,074,818,358
Interest up to 15 Dec. 1922 at $4\frac{1}{2}$ per cent.....	629,836,107
	\$4,704,654,465
Deduct British payments of \$100,000,000 with interest at $4\frac{1}{2}$ per cent.....	100,526,380
	\$4,604,128,085
To be paid in cash.....	4,128,085
Funded debt as from 15 Dec. 1922.....	\$4,600,000,000

At 3 per cent the interest at the outset will be \$138,000,000. Adding the first repayment of \$23,000,000, the sinking fund as a whole for 1923 is \$161,000,000. On the announcement of these terms, there was a buoyancy in Sterling exchange, showing great confidence that Britain will be able to meet these annual charges. There are various estimates of the favorable balance in her foreign trade, including shipping insurance and interest on her foreign investments. All authorities agree, however, that this balance amply covers the sums to be transmitted to the United States. On 7 Feb. 1923 President Harding appeared before Congress and urged approval of the British-American debt arrangement. The House passed the Debt Funding Act 9 February by a vote of 291 to 44. The Senate passed it 16 February by a vote of 70 to 13. On 22 February the House accepted the Senate changes in the bill and it was sent to the President by whom it was approved. Having settled with Great Britain, there now arises the question whether the United States, possibly in association with Britain, should explore the possibility of funding other European debts, due to these powers. In 1921 these debts were:

DUE TO	From France	From Britain	From Italy	From other nations	From total
United States.....	3,596	4,560	1,659	1,096	10,911
Great Britain.....	2,970	.....	2,322	4,489	9,781
France.....	.....	.....	.....	3,122	3,122
Other nations.....	252	863	34	.....	1,149
Grand total.....	6,818	5,423	4,015	8,707	24,963

Of these obligations the gross total of which is roughly equal to the Federal debt of the United States, the following sums have been lent to Russia under the Czarism.

By Great Britain.....	\$2,840,000,000
By France.....	5,459,000,000
By United States.....	188,000,000
	\$8,487,000,000

About one-third of the obligations are thus due from Russia and must be pronounced irrecoverable. Among bankers, both in London and New York, there has been a considerable body of opinion in favor of debt cancellation. It has been argued that most of these debts are merely wastepaper and that it would be advantageous on commercial grounds to drop them altogether

and gain the benefit which, it is believed, would accrue from a renewal of trade between the Old World and the New. According to this view, Europe is more valuable to the United States as a purchaser of cotton, grain, meat, metals and manufactures than she is ever likely to be as a debtor ready to repay. Others, led by Senator Borah, think that cancellation of debts should be only agreed to on condition that Europe disarm, since otherwise the relief afforded would be merely an encouragement to the militarists who would demand larger expenditure on preparations for further war. One suggestion has been that a second Washington conference be called by the President to deal with disarmament and the debts as one proposition. This idea, incorporated by Senator Borah, in a resolution of the Senate, has not yet found acceptance.

With Finland, arrangements have been made for the repayment in 62 years of her debt amounting to \$9,000,000.

PHILIP WHITWELL WILSON.

EVANGELICAL CHURCH. So far as the name is concerned The Evangelical Church is a new ecclesiastical organization which came into being on the morning of 14 Oct. 1922, in Mack Avenue Evangelical Church, Detroit, Mich. when the general conference (in special session) of the Evangelical Association and the general conference of the United Evangelical Church met in joint session and the two bodies, by the provisions of the so-called enabling act, organized as the General Conference of the Evangelical Church. The Evangelical Association was the outgrowth of a religious movement started in Pennsylvania in 1800 by the followers of Jacob Albright, who for a number of years were frequently called "The Albrights." The name "Evangelical Association" was formally adopted in 1816. After many years, differences arose in the church which in 1891 culminated in a division, a considerable number of ministers and members organizing themselves in 1892 into the denomination known as the United Evangelical Church. At the end of the second decade of the separation, the growing conviction that the two churches should be reunited began to find articulate expression. The act of merger referred to above was the consummation of twelve years of negotiations which finally resulted in the adoption of a basis of union by the joint commissions in January 1921, in Chicago. At the time of merging the Evangelical Association had 167,416 church members, with a total enrollment in the Sunday schools of 271,758, assets in its institutions, organizations and departments valued at \$7,688,663.31, and a total property value of \$13,906,435, not including north Germany, south Germany, Switzerland, Japan and Colorado. The United Evangelical Church had 92,001 church members and a total Sunday school enrollment of 147,487, with assets similar to those of the Evangelical Association noted above, of \$3,009,234.67, and a total property value of \$8,931,641. At the beginning of the year the two churches had an aggregate of 252,954 church members and a Sunday school enrollment of 394,422; the Evangelical Church at the beginning of 1923 has 259,417, and 419,-

245 respectively. The total value of the property of both churches a year ago was \$22,838,069, and of the Evangelical Church in January 1923 was \$23,917,585, which figures in neither case, however, include value of property of the former Evangelical Association outside of the United States and Canada. Missions were not established in any new country during 1922, but generally in all in which missions are maintained the work was considerably strengthened. The united church has work in 31 States, Canada, Germany, Switzerland, Latvia, France, China, Japan and Africa.

EVANS, Bernard Walter, British landscape painter: b. Birmingham, England, 26 Dec. 1843; d. 27 Feb. 1922. He was a son of the late Walter Evans who was associated with Pugin in the revival of mediæval architecture, and a cousin of George Eliot. He began his artistic studies at the age of seven under Samuel Lines of Birmingham and in 1865 studied under the late Edward Watson. He moved to London at the age of 21, and from 1870 until his election to the Royal Institute of Painters in Watercolors, exhibited regularly at the Royal Academy. He represented English art at the Paris exhibition and also at the Saint Louis exposition in 1904. He originated the City of London Society of Artists. Specimens of his work are to be found in the permanent collection at South Kensington, the Sydney Art Gallery, the Melbourne Art Gallery and in Cartwright Hall, Bradford.

EVANSVILLE COLLEGE, a Methodist Episcopal co-educational institution, founded 17 Feb. 1919 and located at Evansville, Ind. In 1922-23 it had a faculty of 23 members, 340 students, property valued at \$575,000 and an income of \$66,000. Dr. Alfred F. Hughes, S.T.B., D.D., is president.

EWING COLLEGE, a missionary Baptist co-educational institution founded in 1867 and located at Ewing, Ill. In 1922-23 it had a faculty of 10 members, 95 students and property valued at \$150,000. Income figures not given. August Griesel was acting president 15 Jan. 1923.

EXPLORATION. The outstanding event in the field of exploration during 1922 was the attempt made in the spring by the joint expedition of the Royal Geographical Society of London and the British Alpine Club to reach the unconquered summit of Mount Everest—the loftiest peak not only of the Himalayas but in the world, its height being 29,002 feet or 5½ miles. The expedition, led by Brig-Gen. the Hon. C. G. Bruce, was organized to carry on the work begun in 1921 by a similar expedition commanded by Col. C. Howard Bury, which attained an altitude of 23,000 feet. General Bruce and his party left Darjeeling, India, 26 March and marched to Rongbuk Glacier where the base camp was established at a height of 16,500 feet. The actual climb began on 19 May. By noon of the second day the party had reached a height of about 25,000 feet. The cold was so intense that already at least two members of the party of four, led by George L. Mallory, had been frost-bitten, while a third was too ill to proceed. At 2:15 p.m.

on 21 May this climbing party reached the height of 26,800 feet and was then forced to turn back. The climb had been made without the use of oxygen. A second attempt to reach the summit of the mountain was begun on 24 May by a party consisting of Captain Noel, Tejbir, Geoffrey Bruce and George I. Finch, all using oxygen. On the first day it reached a height of 23,000 feet and camped on the North Col; the second day it attained an altitude of 25,500 feet, weather conditions forcing it to make camp at that point. Snow was falling fast and after sunset the storm developed into a gale. Describing his experiences on that night, Mr. Finch said, "a dead, numbing cold was creeping up my limbs—a thing I had only once before felt and to the seriousness of which I was fully alive. Like an inspiration came the thought of trying the effect of oxygen. We hauled an apparatus and cylinders into the tent, and, giving it the air of a joke, we took doses all around. The result was marvelous. We slept well and warmly." The following day the party, minus Tejbir, who was forced to give up at 26,000 feet, climbed to a height of 27,300 feet. Here exhausted by their struggles and weak from hunger the members of the party were forced to abandon their efforts. To quote Mr. Finch: "Everest, itself, was the only mountain top which we could see without turning our gaze downward. Though 1,700 feet below we were well within half a mile of the summit, so close indeed that we could distinguish individual stones on a little patch of scree lying just underneath the highest point." The point attained was 400 feet above Abruzzi's highest and 1,500 feet above Madison's on Kamet in 1916.

On the descent from one of the upper camps to the base camp an avalanche overwhelmed one party and seven Gurkha porters perished. All of the British members of the party came through without serious harm though suffering from frost-bites, snow blindness and exposure. On the approach to the mountains from Darjeeling, by way of Phari (6 April) and Kampa Dong (11 April) and across the Tibetan Plateau, many interesting and valuable collections of geological, zoological and ethnographic material were made and abundant and excellent photographs taken. Results of the expedition as a whole, were accepted by its promoters and the scientific world as entirely satisfactory. Decision to continue the work in anticipation of ultimate success is practically determined, though whether the next attempt will be made in 1923 has not yet been settled.

Donald B. MacMillan's expedition to Baffin Land, which, in the schooner *Bowdoin*, named for Bowdoin College, his Alma Mater, and built for him by the Bowdoin Association, sailed from Wiscasset, Me., 16 July 1921, passed up Fox Channel to Lat. $68^{\circ} 30'$, finding the eastern shores of the Melville Peninsula and the western shores of Baffin Land heavily banked in ice. MacMillan writes, "At our farthest north we discovered an island about 25 miles in length with high red cliffs. All ice in this vicinity was aground, indicating shoals and stopping all further progress northward.

Sailed southward and at about the Arctic Circle southeast. To our surprise we sailed 15 miles over where land is indicated in our latest and best maps; turned back southwest and sailed over 60 miles of land and no land in sight. All salient points on this western coast are located incorrectly, both in latitude and longitude. We later, with dog-teams, traversed this coast for 150 miles north of Bowdoin Harbor, $64^{\circ} 24'$ in 78° W., and confirmed our observations taken on shipboard. The expedition also succeeded in penetrating into the hitherto unexplored interior as far as Amadjuak Lake and eastward along the coast to Lake Harbor, finding the coast line very different from that indicated on the maps." Director Louis A. Bauer of the Carnegie Institution, department of research in terrestrial magnetism, says "The scientific observations in geophysics obtained by the MacMillan expedition included 1. Continuous photographic registration from 1 Nov. 1921 to 15 June 1922 at a temporary observatory at the winter-quarters of Bowdoin Harbor, of (a) the three magnetic elements and (b) the electric potential-gradient of the atmosphere. 2. Meteorological observations at Bowdoin Harbor from 14 Sept. 1921 to 16 July 1922. 3. Two months series of tidal observations at Bowdoin Harbor. 4. Magnetic observations at 28 field stations in Baffin Land, Labrador and Canada, 21 of these stations being in Baffin Land chiefly on the southern, western and extreme northern coasts. 5. Collection of 69 specimens of rock at the field stations which furnished splendid material for the study of petrology of the region of which but little knowledge had been obtained previously. 6. Miscellaneous geological and chart data. The continuous photographic registrations of the three magnetic elements at winter-quarters will add materially to our knowledge of magnetic storms through the co-ordination and study of the magnetograms obtained at a point so near the north magnetic pole in connection with the corresponding data from observatories in all parts of the world, while the electric potential gradient records furnish data of importance, aiding materially in the discussion of atmospheric-electric phenomena. The field observations have added materially to our knowledge of the distribution and secular variation of the earth's magnetism in Baffin Land and Labrador."

MacMillan has already determined upon another Arctic and sub-Arctic expedition in 1923, for which plans and preparations are already well advanced.

Sir Ernest H. Shackleton (q.v.), whose *Quest* sailed from London 26 Sept. 1921 on an Antarctic and sub-Antarctic cruise of exploration, died on board in harbor, South Georgia, 5 Jan. 1922, and his body, having been brought to Buenos Aires, was, at Lady Shackleton's request, returned and interred upon a prominent headland overlooking the scene of his death. Capt. Frank Wild, associate of Capt. Sir Douglas Mawson, in his 1915-16 Antarctic expedition and of Shackleton's *Endurance* party in 1914-16, second in command, brought the *Quest* home after Shackleton's death and further work was discontinued. Other notable deaths of 1922 among explorers were those of

the Prince of Monaco, 26 June, and of Prof. Rollin D. Salisbury of the University of Chicago, 15 April.

The third North China expedition of the American Museum of Natural History of New York under Roy C. Andrews has been continuously in the field during the year and with most gratifying success. Collections include mammals, hitherto unknown to science, others rare and imperfectly described, and the complete life history of Asiatic fauna is now within reasonable sight of completion. President Osborn of the Museum went to China late in the autumn to lay out and direct further work and complete the program of the Andrews forces. Expeditions to Africa by the museum and to Yucatan and Central America, by a specially organized group of archaeologists, have been definitely decided upon for early dates in 1923.

During the year the Field Museum of Natural History of Chicago sent six expeditions to South America. Two of these were geological, two botanical, one zoological and one archaeological. During August the announcement was made that the archaeological expedition, under Dr. J. A. Mason, had discovered a prehistoric city of considerable size in Colombia. The ruins are located in the Department of Magdalena, 20 miles south of Santa Marta and about 40 miles inland. See also ANTHROPOLOGY AND ARCHAEOLOGY.

Of more than ordinary interest was the announcement made by Vilhjalmur Stefansson on 6 Jan. 1923 of his retirement as an explorer. Approximately 11 years of his life have been spent in the Arctic regions.

An important book on exploration issued during the year was 'The Worst Journey in the World, Antarctic 1910-1913' by Apsley Cherry-Garrard, the official narrative of the Scott Antarctic Expedition of 1910-13. Mr. Cherry-Garrard was the assistant zoologist of the expedition.

HERBERT L. BRIDGMAN,
Secretary, Peary Arctic Club.

EXPLOSIVES, Manufacture of. According to the report of the Department of Commerce made public on 2 Dec. 1922, the total value of explosives manufactured in the United States in 1921 by establishments engaged primarily in that industry was \$59,174,600, compared with \$92,474,800 in 1919, a decrease of 36 per cent. There were 109 establishments engaged in the industry in 1921. Of these 24 were located in Pennsylvania, ten in Ohio, nine in Oklahoma, eight in Illinois, seven in New Jersey, six in West Virginia, five in Missouri, four in Kansas, four in Texas, three in California and three in New York, while the remainder (one or two in each of several States) were scattered more or less generally throughout the country. Of the establishments that reported in 1919, eleven were idle or out of business in 1921, while two new plants were placed in operation during the latter year. The decrease in production of explosives was accompanied by decreases in the number of persons employed, the amount paid out in salaries and wages and in the cost of materials. The average number employed during the year was 4,478 in 1921, compared with 9,249 in 1919. The amount paid out

in salaries and wages in 1921 was \$13,610,200, compared with \$25,749,200 in 1919. Materials cost \$30,644,300 in 1921, as compared with \$45,911,000 in 1919. Twenty-six establishments engaged in the manufacture of dynamite turned out 167,258,300 pounds valued at \$28,457,300 in 1921, compared with 212,529,700 pounds valued at \$37,230,700 turned out by 27 establishments in 1919. Forty-two concerns engaged in the manufacture of blasting powder produced 7,340,768 kegs of 25 pounds each in 1921, compared with 7,406,991 kegs in 1919. The value of the blasting powder manufactured in 1921 was \$12,544,900, compared with \$12,168,500 in 1919, an increase of 3.1 per cent. Five establishments engaged in the manufacture of black gun powder turned out 990,700 pounds valued at \$227,400 in 1921, compared with 11,730,100 pounds valued at \$2,096,600 turned out by seven establishments in 1919. The total production of nitro-glycerine in 1921 was 45,855,400 pounds, compared with 56,361,200 pounds in 1919. Of the nitro-glycerine manufactured in 1921, 172,600 pounds valued at \$160,700 was sold as such. The amount used in the manufacture of dynamite was 42,264,100 pounds, compared with 48,024,600 pounds in 1919.

EXPORTS AND IMPORTS OF PRINCIPAL COUNTRIES. See WORLD INTERNATIONAL TRADE.

EXPOSITIONS. During 1922 preparations were being made for the Sesqui-Centennial Exposition to be held at Philadelphia in 1926. The exhibition is to be known as the "World Festival of Peace and Progress." According to the plans outlined the exhibition is to open toward the last of April 1926 and close in November of the same year. It will mark the 150th anniversary of the signing of the Declaration of Independence. During the last week in September 1922 the first country fair of southeastern Alaska was held at Juneau. It was successful in demonstrating the important possibilities of the southeastern section of the Territory of Alaska in the way of agricultural development. The exhibits at the fair consisted largely of vegetables grown in the temperate zone of a quality that would bear comparison with those of any section of the United States. Other attractions at the fair were exhibits of native handwork and photographs of Alaskan scenery. The National Dairy Show held at the Minnesota State Fair Grounds in October was one of the greatest aggregations of farmers ever assembled. Everything in connection with the dairy industry was exhibited. The exhibit of the United States Department of Commerce held in November also attracted decided interest, comprising within its organization the bureau of navigation, bureau of lighthouses, coast and geodetic survey, bureau of foreign and domestic commerce, bureau of fisheries, bureau of census and bureau of standards. All except the census bureau and the bureau of fisheries were represented at the exhibition. In November was held at Seattle the annual exposition of the Pacific Northwest \$100,000,000 Industry—the fruit crop. Approximately one mile of booths under a canopy of evergreens and autumn leaves housed the finest specimens of fruit yield and made a most impressive spec-

tacle. One of the features of this exposition was the home canning contests. The Marine Exposition held in New York early in November attracted many visitors. The purpose of the exhibition was to display the service and wares of the American shipping companies, ship builders and marine equipment manufacturers. The Kansas City Livestock Show was held in that city 18-25 Nov. 1922. Approximately 2,000 head of livestock were exhibited. Beef cattle were the principal attraction and of these, Herefords led with 672 entries, competing for \$11,255 in prize money.

Of foreign expositions the most noteworthy was that held in Rio de Janeiro from 7 September to 15 Nov. 1922 in commemoration of the centennial of the independence of Brazil. The Congress of the United States appropriated \$1,000,000 for American participation in the exposition. The United States building at the exposition was one of the most attractive there. It is a permanent structure and was designed to house the American Embassy after the close of the exposition. Secretary of State, Charles E. Hughes, and other high officials of the American government attended the exposition, further particulars of which will be found in the article on Brazil. The Second International Eastern Fair and Market was held in Lwow (Lemberg) from 5-15 Sept. 1922. It proved a great success. The exhibiting facilities were greater than those of the first fair held in 1921. The products displayed showed that the plants destroyed or damaged during the war had in the main been restored, and in addition, new enterprises had been established to supply goods formerly obtained from Germany, Austria and Russia. The most notable development occurred in the display of Polish-built machinery, machine tools and agricultural equipment. Apart from this, the manufactured articles exhibited largely represented handwork. The Holland Industries Fair, the seventh of its kind, was held at Utrecht, 4-9 Sept. 1922. The fair did not attain in extent the general popularity of the exhibitors of former fairs. In the first place, there was the general economic de-

pression and in the second place, the change of an annual into a semi-annual fair made itself felt to a certain extent. Henceforth the Holland Industries Fair will be a semi-annual event, one in the spring and one in the autumn. In 1922 the Nizhni-Novgorod Fair was reinstated for the first time since 1917. The revival of the fair made necessary much reconstruction as many of the permanent buildings on the fair grounds had been destroyed during the period of rigid communism. The most striking exhibits at the fair came from central Asia, Persia and Caucasus. Turkestan merchants displayed their goods in a great circular tent, the outside of which was festooned with strings of many colored stones. Persia exhibited large quantities of rugs, dried fruits and nuts. Russian peasant handwork was one of the most interesting features of the fair. White wood figures, gaily painted dishes, boxes, spoons, toys, etc., constituted this part of the exhibit. Announcements were made for the Fourth Official Commercial Fair to be held at Brussels 9-25 April 1923. In 1922 this fair leased 29,000 square metres to exhibitors and applications for space up to 2,000 metres had to be rejected. For the 1923 fair, therefore, 31,000 square metres of space is provided. An invitation to American manufacturers and merchants to the International Commercial Exposition in Osaka, Japan was received by the American Department of Commerce late in 1922. The date of the exposition is 31 March to 31 May 1923. Exhibits are not to be returned to the exhibitors, but are to be placed permanently in Osaka Commercial Museum. The Ninth British Industries Fair was scheduled for 19 February to 2 March 1923. The most enterprising and dependable firms in Great Britain are exhibitors at this annual event. An exhibit of agricultural machinery in the Grand Palais on the Champs-Elysee, Paris, was scheduled for January 1923. It was confined strictly to articles used in agriculture, viticulture, horticulture and forestry. It was open to manufacturers of all countries.

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FABBRI, Alessandro, American explorer and inventor: b. New York, 1878; d. there, 6 Feb. 1922. He was the son of Ernesto G. Fabbri, a member of the firm of J. P. Morgan and Company. He was educated at the Westminster School, Simsbury, Conn., and subsequently under private tutors in Europe. He achieved distinction as a naturalist, hunter, yachtsman, explorer and inventor. When he began his scientific investigations he equipped a fine working laboratory. He built a large wireless station at Bar Harbor, Maine, which at the outbreak of the war he offered gratis to the government of the United States. His offer was declined, but the plant was commandeered and Mr. Fabbri was given the rank of lieutenant in the navy and placed in command. His wireless station was picked by a commission of engineers and radio experts sent to this country by the Allies as the best station for their purposes on the Atlantic seaboard. After the government had taken over the plant it paid to Mr. Fabbri the amount of his estimated expenditures on it. Mr. Fabbri also perfected a moving picture machine with which it was possible to take pictures of microscopic organisms showing their development. This he worked out in connection with the experimental work of Dr. Alexis Carrel of the Rockefeller Institute.

FACTORY INSPECTION. See MEDICINE AND SURGERY, ADVANCEMENT OF.

FAILURES, Business. See BUSINESS FAILURES.

FAIRMOUNT COLLEGE, a co-educational institution of Congregational affiliation, founded in 1895 and located at Wichita, Kan. In 1922-23 it had a faculty of 26 members, 456 students and an income of \$75,000. No figures given as to value of property. Dr. John D. Finlayson is president.

FALKENHAYN, Erich von, German general: b. 1861; d. Wildpark, near Potsdam, Germany, 8 April 1922. In 1913, at the age of 52 he was made lieutenant-general and appointed Minister of War—the youngest man ever to hold that position in Germany. The following year the World War broke out and in December 1914, after the failure of von Moltke, Falkenhayn was appointed his successor as chief of the German general staff. Although he never attained the popularity that came to von Hindenburg and never was rated as high professionally as was von Ludendorff, Falkenhayn, nevertheless, was, for almost two years, in many respects perhaps the most powerful individual in Germany. During the first year of his service as chief of the general staff, his plans were fairly successful. In May 1915, the Germans made a violent attack upon Ypres which gained for them a considerable amount of ground at a cost materially less than was the cost of the attacks of the previous autumn. On the other hand, the British at Neuve Chapelle and Loos

and the French in Champagne failed to break the lines of Falkenhayn's armies. In Russia the Germans gained Courland and all of Poland, while they also overran Serbia. Bulgaria was brought into the war, on the side of the Central Powers, in October 1915 and in December following the British began the evacuation of Gallipoli, after one of the greatest failures of the war. At this time Falkenhayn was almost omnipotent in the German war councils. At the beginning of 1916 he was forced to choose between a continuance of the offensive against Russia and reverting to the original plan of making France the main theatre of the war. Unfortunately, for his own reputation he chose the latter alternative and then followed the disastrous failure of the Germans at Verdun. In August 1915, Falkenhayn was succeeded, as chief of the general staff, by von Hindenburg. It was said at the time of Falkenhayn's removal as chief of staff that he had been dismissed for urging the German emperor to abandon the Balkan campaign and shorten all of the German lines. He was thereafter sent on a mission to Turkey and in the latter stages of the war was never heard of. He was an ardent exponent of German militarism and is acknowledged to have been a clever and efficient organizer. His early career was not promising. Like Hindenburg he was called an army failure. He drifted out to China, and his chance came with the outbreak of the Boxer Rebellion. He was made the German governor of Tien-Tsin and upon his return to Berlin was reinstated. He is credited with having been a personal favorite of the kaiser and to the latter's friendship some have attributed his rapid rise to power. At any rate, in 1916, at the age of 54 he was the youngest of the German military leaders. It was he who is said to have recognized the hidden merits of von Hindenburg and to have summoned the latter from his Hanoverian retreat and placed him in charge of the army which won for Germany her great victories in the marshes of East Prussia.

FALKLAND ISLANDS, a British Crown Colony in the South Atlantic, 300 miles east of the Straits of Magellan. The principal islands are East and West Falkland. There are about 100 small islands in the group. The total area is 6,500 square miles. South Georgia is a dependency of the colony and has an area of about 1,000 square miles. The South Shetlands, South Orkneys, the Sandwich group and Graham's Land are dependencies of the colony also. The population is 3,255. The chief town is Stanley, which has a population of 950. Education is compulsory. There are three schools with a combined enrollment of 306 pupils. In 1919 the imports were valued at \$5,000,000 and the exports at \$10,400,000 approximately. The annual revenue of the colony averages \$225,000 and the expenditures \$135,000. Customs, rent of crown lands, postal receipts and licenses are

the chief sources of revenue. Public works and the postal service are the chief items of expenditure. The colony has no public debt. Wool and whale products are the principal exports, while foods, timber, coal and clothing are the chief imports. There is good pasturage on the islands and sheep-raising is a promising industry. There are 700,000 sheep in the colony. Whaling and sealing give employment to many. The whaling industry products are valued at \$10,000,000 yearly. There is cable communication with the outside world via Montevideo. There is regular steamer communication with Great Britain and there is interinsular communication by means of a small steamer. For further information consult the annual report issued by the Colonial Office, London.

FALL, Albert Bacon, United States public official: b. Frankfort, Ky., 26 Nov. 1861. He received some of his education in country schools, but was principally self-taught. Between the age of 18 and 20 years he taught school, at the same time devoting himself to the study of law, which he practiced from 1889-1904. During the Spanish-American War he served (1898-99) as a captain in the Volunteer Infantry. His varied experience has included working on a farm and cattle ranch, and in a mine. In New Mexico, where he resides, he served several times as a member of the New Mexico Legislature, as a member of the Constitutional Convention, associate justice of the Supreme Court, and twice as Attorney-General of New Mexico Territory. He was elected by the New Mexico Legislature to the United States Senate, 27 March 1912, and was re-elected for terms 1913-19 and 1919-25, respectively. In 1921, however he resigned his senatorship to accept the appointment as Secretary of the Interior in President Harding's Cabinet. He took oath of office and began his duties 5 March 1921. Early in January 1923 he announced that he would retire 4 March, and on that date he was succeeded by Dr. Hubert Work, who had succeeded Will H. Hall as Postmaster General.

FALLOWS, Samuel, American clergyman and educator: b. Pendleton, England, 13 Dec. 1835; d. Chicago, Ill., 5 Sept. 1922. His parents left England and settled in Wisconsin in 1848 and engaged in farming. This son grew up on the farm near Madison, went to school at Astorian, Wis., and was graduated from the University of Wisconsin in 1859. From 1859-61 he was vice-president of the Galesville University. In 1862 he was made chaplain of the 32d Wisconsin Infantry and later organized the 40th Wisconsin Infantry, known as the "Normal Regiment," because it included so many teachers and students. He was made its colonel and was brevetted brigadier-general for gallant service. After the war he returned to his pastorate of the Summerfield Church, Milwaukee, then the leading Methodist Episcopal Church in Wisconsin. Later he became pastor of the Spring Street Church in Milwaukee, and while serving in that pulpit he was appointed by Governor Fairchild in 1871 State Superintendent of Public Instruction for Wisconsin, and in this office he accomplished the unifica-

tion of the educational system of Wisconsin. In 1874 he became president of Wesleyan University at Bloomington, Ill. In 1875 Bishop Fallows allied himself with the Reformed Episcopal Church (which had been founded in New York in 1873) and immediately became rector of Saint Paul's Reformed Episcopal Church, Chicago, which pulpit he occupied from 1875 until his death. On entering upon his duties here he assumed the title of "Missionary Bishop of the West." Shortly afterwards he became presiding bishop of the entire church, both in the United States and Canada. In 1908 he succeeded Archbishop Ireland as chaplain-in-chief of the Grand Army of the Republic and in 1913-14 he was department commander of the Illinois G. A. R. Like the late Bishop Potter of New York, he endeavored to find a substitute for the saloon by the establishment of a "home saloon," as he called it, in Chicago in 1907; and for two years it was a success. He was also a lecturer and writer. His books include: 'Bright and Happy Homes' (1877); 'The Home Beyond' (1879); 'Synonyms and Antonyms' (1884); 'Handbook of Abbreviations and Contractions' (1884); 'Handbook of Briticisms, Americanisms,' etc. (1884); 'Supplemental Dictionary of the English Language' (1887); 'Webster's Encyclopedic Dictionary' (1897); 'Past Noon' (1892); 'The Bible Looking-Glass' (1898); 'Life of Samuel Adams' (1898); 'Splendid Deeds' (1900); 'Popular and Critical Biblical Encyclopedia' (1901); 'Story of the American Flag' (1903); 'Science of Health' (1904); 'Christian Philosophy' (1905); 'Memory Culture' (1905), and 'Health and Happiness' (1908). He was made president of the Society Army of the Tennessee in 1917.

FAR EASTERN QUESTION. See WASHINGTON CONFERENCE.

FARM ANIMALS. See AGRICULTURE IN THE UNITED STATES.

FARM BUREAU FEDERATION, American. The Farm Bureau Movement had its real origin in the South. In 1902 when the Mexican boll weevil began its depredations in the cotton fields of Texas, Dr. Seeman A. Knapp, secured an appropriation of \$250,000 from the Department of Agriculture and established the Farmers' Co-operative Demonstration Work and demonstration agents were appointed. The United States government approved the idea, and Asbury F. Lever, then a Congressman from South Carolina, introduced in Congress the Smith-Lever bill, providing that the United States should appropriate funds to be matched by the States in putting an agricultural agent in every county in the United States. The Smith-Lever funds provide the basis for the agricultural extension work of the United States Department of Agriculture and the State colleges of agriculture.

Throughout the country the farmers have banded themselves into farm bureaus, through which the county agent can best carry on his work. From the Government appropriations, there is available only about \$1,000 per county, not enough to pay the salary of a high-class agent and therefore the farmers themselves, who

are members of the county farm bureaus, pay dues (usually \$10 per year) and the funds so raised are used in connection with the Federal appropriation to pay the county agent's salary, office and other expenses. In Illinois farm bureau members pay \$15 each per year, in Ohio \$10, in Iowa \$5, in one county in Idaho, \$25. In McLean County, Illinois, there is a county agent with three assistants, none of whom receives a salary of less than \$5,000 a year though the Federal appropriation is but \$1,000 annually.

The secret of the success of the Farm Bureau movement lies in the fact that it is the farmer's own scheme. It started to get its real hold when the farmers themselves took it over, about 10 years ago—in Broome County, New York, in Dekalb and Kankakee counties, Ill., in Pettis County, Mo., in Oneida County, Wis.,—and began to run it. The idea spread through the corn belt and westward with great rapidity. Eventually the county farm bureaus began to find that they had many problems State-wide in nature and that they needed State-wide organizations. Federation began with 34 farm bureaus in New York State, where in 1917 the New York Farm Bureau Federation was organized. Other States followed rapidly in federating their county units, so that in 1918, more than a dozen commonwealths had State federations.

During the war, leaders of the State farm bureaus frequently were called to Washington to confer on various matters relating to food production, etc. Out of these conferences grew the idea of a national organization. A preliminary conference was held in Ithaca, N. Y., on 12 Feb. 1919 and the organization meeting was held in Chicago 12–13 Nov. 1919. A tentative constitution was completed and 3 March 1920, was set as the date for ratification. At the ratification meeting 28 States signed up, and the American Farm Bureau Federation was born. The membership was approximately 400,000. Each member of the county farm bureau contributed to the American Farm Bureau Federation through his State Farm Bureau Federation 50 cents. In less than two years the American Farm Bureau Federation had increased its membership to 967,279. Forty-seven States (all except South Carolina) have affiliated with the national organization. Of county farm bureaus there are 1,486.

The American Farm Bureau Federation vitalized co-operative marketing in America, through its national commodity marketing conferences. Separate conferences have been held on grain, live stock, fruit, dairy products, cotton and wool. And each one of these commodities is now receiving special attention in the national office. Out of these conferences came the commodity committees which have brought to the attention of both producers and consumers the urgent need for better distributive systems.

The grain marketing conference resulted in the formation of the Farmers' Grain Marketing Committee of 17. This committee devised a co-operative plan which is now in effect and is known as the United States Grain Growers, Inc. More than 52,000 farmers and 600 co-operative elevators had joined the United States Grain Growers by the end of 1922.

The live stock marketing conference was responsible for the Farmers' Live Stock Market-

ing Committee of 15. This committee devised a plan for the marketing of live stock which involves co-operative commission houses and orderly marketing. The plan in detail was unanimously approved by the producers in conference in Chicago on 11 Nov. 1922. The National Live Stock Producers' organization has established co-operative live stock commission houses at Saint Louis, Chicago, Peoria, Indianapolis, Buffalo, Fort Worth, Kansas City, Sioux Falls, Sioux City and Cleveland. Invariably the "Producers" companies lead all the other firms at the various terminals in business handled, and they return nearly half the commission charge as "patronage dividend" to their customers. Out of the fruit marketing conference came the Farmers' Fruit Marketing Committee of 21. It began its investigations at Atlanta, Ga., 19 Nov. 1922. Subsequently, this committee took over the North American Fruit Exchange with sales agencies in 150 carlot markets and revamped it into the grower-owned and grower-controlled Federated Fruit and Vegetable Growers, Inc.

A dairy marketing conference resulted in the formation of the Farmers' Dairy Marketing Committee of 11, which held its initial meeting in Saint Paul, Minn., on 11 Oct. 1922, during the National Dairy Show. In the fall of 1922 a subsidiary Committee of Nine was appointed which worked out the plan for a national sales agency for dairy products to begin selling butter, cheese and condensed milk by 1 Sept. 1923.

A wool growers' conference created the Farmers' Wool Marketing Committee of 25, which has succeeded in developing co-operative wool pools in 18 States. The wool pools last year handled 40,000,000 pounds of wool. An additional benefit from the wool pools is that they have educated the producer through the grading systems so that the quality of the clip has been greatly improved.

The American Farm Bureau Federation also held a cotton marketing conference in Memphis, Tenn., on 26 April. This conference endorsed the co-operative marketing plan of the American Cotton Growers Exchange. The basis of the plan is a 100 per cent cotton pool and the Texas Farm Bureau Federation is the bulwark of the movement.

When the American Farm Bureau Federation was organized it was apparent that the first great national service to be performed for the farmer was to improve his marketing systems. The Department of Co-operative Marketing has therefore been one of the most important divisions of the national organization. It is directed by Walton Peteet, formerly secretary of the Texas Farm Bureau Federation and has as legal advisor Aaron Sapiro, California's noted co-operative counsel. There are several other departments of the American Farm Bureau Federation which have grown to positions of great service and power. A Washington office of the Federation has been set up to study national legislative problems and to voice the viewpoint of the American farmer. It is under the direction of three members of the executive committee, and due largely to its activities, the Congress has passed a vast amount of agricultural legislation. This legislation was accomplished largely by the intervention of the farm

bloc, originally organized in the Washington office of the American Farm Bureau Federation. Among the measures advocated by the American Farm Bureau Federation are the following:

The packer and stock-yards control measure; regulation of grain exchanges and future trading in grain; extension of War Finance Corporation's powers to lend \$1,000,000,000 to farmers and co-operative associations; increasing by \$25,000,000 the working capital of the Federal Farm Loan System; Federal Highway Act, providing \$75,000,000 for farm-to-market roads; and the momentous Intermediate Credits Act.

The Department of Transportation has built up a traffic file on railroad rates second to none. The Department of Legal Counsel, intervened for the Farm Bureau in the famous Pittsburg Plus case, the Land Multiple Case, the valuation of railroads, and other important cases. The Department of Research conducts economic studies of farm problems, and furnishes information for use of other departments. The Department of Information publishes a *Weekly News Letter* which goes to Farm Bureau officials, State and national, and to county farm bureaus. It also maintains a news service, and a publishing division, which prints and distributes booklets, pamphlets, and bound volumes; heads up the publicity work for many of the national co-operatives, and produces and distributes rural motion pictures, having built up the most extensive non-theatrical distribution in America.

The Federation has set up a taxation service and a definite taxation policy has been outlined. The Bureau opposed the proposed general sales tax and made a strong fight for the retention of the excess profits tax. The Federation sent to Europe more than 500,000 bushels of farmers' gift corn, to alleviate famine conditions. A woman's committee has been named to outline the woman's work of the Federation, the establishment of a woman's department being contemplated. Questionnaires have been issued on important questions affecting agricultural policy; a uniform system of bookkeeping has been worked out for farm bureau organizations; investigations have been instituted by the Federal Trade Commission and Congressional bodies at the instance of the Bureau looking toward the solution of a number of important agricultural problems.

O. E. Brodfute, Xenia, Ohio, is president of the American Farm Bureau Federation, and W. H. Walker, Willows, Calif., is vice-president. The executive committee, which is the governing board chosen by the board of directors in annual convention, is as follows: Central Group—Frank Smith, New York; Frank App, New Jersey; George Putnam, New Hampshire; Central Group—J. F. Reed, Minnesota; W. H. Settle, Indiana; Howard Leonard, Illinois; Western Group—C. S. Brown, Arizona; J. F. Burton, Utah; J. M. Rodgers, Colorado.

FARM CREDITS. See RURAL CREDITS.

FARM LOAN SYSTEM, Federal. The Federal Farm Loan System at the beginning of the year 1922 consisted of 12 Federal land banks, 23 joint stock land banks and 4,151 farm loan associations. The number of the Federal land

banks is prescribed by law and cannot be increased. The number of joint stock land banks increased during the year to 63, and the farm loan associations to 4,487. The 12 Federal land banks, receiving applications through the national farm loan associations closed during the year 74,055 loans in the aggregate sum of \$224,301,400, and were able throughout the entire year to meet all calls upon them for loans of satisfactory character. The same banks during the year sold to the public farm loan bonds to a total of \$278,650,000. This being in excess of loaning requirements, bonds held by the Federal Treasury were repurchased to the extent of \$70,150,000.

The Federal land banks at the beginning of the year 1921 were charging 6 per cent interest on loans made, and issuing farm loan bonds bearing 5 per cent interest. The bond rate was reduced during the year from 5 to 4½ per cent, and the loaning rate from 6 to 5½ per cent, which is now the prevailing rate.

The stock originally subscribed by the Federal government in the Federal land banks is automatically retired as borrowers take stock in the farm loan associations, which in turn take a like amount of stock in the Federal land bank. This retirement of government stock during the year amounted to \$2,333,890.

The Federal land banks are essentially mutual, their function being to supply money to borrowing farmers at actual cost. Their profit-making capacity is measured by the difference between the bond rate and the loaning rate. After this has been collected, expenses deducted and proper provision made for reserve, the balance of the difference is returned to the stockholding association in the form of dividends. All of the banks have paid regular dividends to their stockholders cumulative from the date of their organization, and are now on a basis of substantial earning prosperity. The net earnings of the several banks for the year 1922 were as follows:

Springfield	\$243,288 11
Baltimore	236,973 46
Columbia	338,589 49
Louisville	462,545 13
New Orleans	495,988 54
Saint Louis	515,073 13
Saint Paul	637,541 88
Omaha	767,003 59
Wichita	479,546 74
Houston	599,488 12
Berkeley	241,298 55
Spokane	675,357 59

At the conclusion of the year the 12 Federal land banks, after paying dividends, added more than \$1,300,000 to their reserve account and more than \$1,100,000 to their undivided profits account. The total resources of the 12 Federal land banks on 31 December were \$697,358,489.33. The joint-stock land banks during the year closed 15,916 loans, amounting to \$138,684,779, making the total loans closed under the supervision of the bureau for the year 89,971, amounting to \$362,996,179.

CHARLES E. LOBDELL,
Federal Farm Loan Commissioner.

FARM POPULATION OF THE UNITED STATES. According to the Census Bureau, the number of persons dwelling on

farms in the United States in 1920 was 31,614,269. Of these 16,496,338 were males and 15,117,931 were females. Of the total farm population 49.5 per cent was 21 years of age and over, 24.7 per cent between 10 and 20 years and 25.7 under 10 years. Those 21 years and over numbered 15,632,093. For the country as a whole those 21 years and over comprised 57.6 per cent of the total population. The farm population, therefore, includes a relatively large proportion of persons under 21 and a relatively small proportion 21 years and over. The difference in age distribution was declared by the Census Bureau to be due in large part to the fact that the majority of persons who leave the farm to take up their residence elsewhere have reached or passed 21 years. The largest proportions of children and youth in the farm population are shown for the Southern States and the lowest for the New England States, New York, New Jersey and California. The sex ratio of farm population on 1 July 1920 was 109.1 males to 100 females, while the ratio for the entire population was 104 males to 100 females. The Department of Agriculture estimated that in 1922 the farm population of the United States decreased 460,000.

FARM PRODUCTS. According to the Department of Agriculture, farm production of all kinds in the United States in 1922 had an estimated gross farm value of \$14,310,000,000, as compared with the estimate of \$12,402,000,000 placed upon the farm production in 1921. Of the 1922 total, \$8,961,000,000 represented the value of crops, while \$5,349,000,000 represented the value of animal products. In 1921 the crops were valued at \$6,934,000,000 and the animal products at \$5,468,000,000. In making public the foregoing estimates, the Department of Agriculture stated that there were some duplications in the crop and animal products estimates to the extent of the crops used in producing animal products, but that the extent of this duplication had not been ascertained at the time the report was made public, 7 Feb. 1923.

Crop prices increased, the Department said, except in the case of nearly all fruits, beets, clover seed, rye, potatoes, sweet potatoes and some other vegetables. On the other hand, the price of animal products generally declined, including prices of veals, milk cows and other cattle, horses and mules, all dairy products, eggs and poultry except turkeys. Prices of sheep, lambs and swine increased while wool prices nearly doubled. A 10-years' study of production and prices shows that the crop value in 1922 was 46 per cent higher than in 1913. The peak was reached in 1919 with a crop value 152 per cent higher than in 1913. In 1920 crop prices were only 78 per cent above 1913 and in 1921 only 13 per cent above 1913. Despite the increase in 1922, the department points out that the crop value was still lower than in any year since 1913 with the exception of 1921.

Animal products values lagged behind crop values during the 10-year period and show less fluctuation. The peak was reached in 1919 when an increase of 125 per cent over 1913 was shown. The subsequent decline in values of animal products was less precipitous than in the case of crop values, but the 1922 figure shows

an increase of only 44 per cent above 1913 as compared with an increase of 46 per cent in crop value.

The purchasing power of the 1922 crop value in terms of other products was 89.9 as compared with 100 in 1913. The purchasing power of the 1921 crop value is placed at 70.3 as compared with 100 in 1913. The purchasing power of animal products in 1922 was 88.5, and in 1921 it was 91.5, using 100 in 1913 as a base in both instances.

Although the purchasing power of crops and animal products took almost divergent courses in some years since 1913, they came almost together in 1922, it is pointed out.

Principal Farm Crops.—The principal crops grown in the United States in 1922—such crops as corn, cotton, wheat, potatoes, rye, etc.—were estimated by the Department of Agriculture as having a farm value on 1 December of \$7,483,326,000. These crops in 1921 had a farm value of \$5,630,781,000 and in 1920 a value of \$8,998,820,000. It was stated that the 1922 figures were subject to revision, but that the 1920 and 1921 figures were final. The crop value was 34 per cent larger in 1922 than in 1921, while crop prices showed an increase of 24 per cent on 1 December of that year, as compared with 1 Dec. 1921. The mass of crop production in 1922 exceeded that of 1921 by 8 per cent. In its review, the Department of Agriculture said that prices of many farm crops were lower per unit in 1922 than in 1921. The price of hops was 65 per cent lower; the price of potatoes 47 per cent lower; the price of cabbage 47 per cent lower; the price of apples 41 per cent lower; the price of cranberries 40 per cent lower; the price of pears 38 per cent lower; the price of peaches 16 per cent lower; the price of maple sugar 15 per cent lower; the price of sweet potatoes 12 per cent lower and the price of clover seed 6 per cent lower. Most of the leading crops, however, brought higher prices in 1922 than in 1921. Corn, for instance, was 55 per cent higher, cotton 47 per cent higher, oats 35 per cent higher, barley 26 per cent higher, wheat 9 per cent higher, tobacco 16 per cent higher; rice 5 per cent higher, beans 40 per cent higher, flaxseed 46 per cent higher and grain sorghums 124 per cent higher. The wheat crop of 1922 was 5 per cent larger than the crop of 1921, and was the fifth largest on record, production being estimated at 856,000,000 bushels, compared with 815,000,000 bushels in 1921. A few crops reached a record high production during the year. These included rye, potatoes, sweet potatoes, tame hay and possibly pears and cabbage, records for which cover but a few years. The rice crop, estimated at 41,965,000 bushels, was the third largest on record. The tobacco crop (1,324,840,000 pounds) was the fourth largest grown. The cotton crop was the smallest grown in 21 years with the exception of the 1921 crop. Corn, as usual, was the country's most valuable crop, estimated as being worth \$1,900,287,000. Cotton stood second, with an estimated value of \$1,192,461,000, to which should be added \$177,756,000 as representing the value of the cottonseed produced. Hay was the third most valuable crop, having an estimated value of \$1,331,679,000. No other crop reached

FARM PRODUCTS

\$1,000,000,000 in value in 1922. The wheat crop of the year was valued at \$864,139,000, standing as the fourth most valuable crop of the country. The following table shows by crops the acreage, production figures and value, based on farm prices as of 1 December of the various crops for each of the years 1920, 1921 and 1922.

ACREAGE, PRODUCTION AND VALUE OF PRINCIPAL
FARM CROPS GROWN IN THE UNITED STATES
IN THE YEARS 1920, 1921 AND 1922.

CROP AND YEAR	Acreage	Production	Farm value 1 Dec.
Corn:		<i>Bushels</i>	
1920.....	101,699,000	3,208,584,000	\$2,150,332,000
1921.....	103,740,000	3,068,569,000	1,297,213,000
1922.....	102,428,000	2,890,712,000	1,900,287,000
Winter wheat:			
1920.....	40,016,000	610,597,000	907,291,000
1921.....	43,414,000	600,316,000	571,044,000
1922.....	42,127,000	586,204,000	614,561,000
Spring wheat:			
1920.....	21,127,000	222,430,000	289,972,000
1921.....	20,282,000	214,589,000	183,790,000
1922.....	19,103,000	270,007,000	249,578,000
All wheat:			
1920.....	61,143,000	833,027,000	1,197,263,000
1921.....	63,096,000	814,905,000	754,834,000
1922.....	61,230,000	856,211,000	864,139,000
Oats:			
1920.....	42,491,000	1,496,281,000	688,311,000
1921.....	45,495,000	1,078,341,000	325,954,000
1922.....	40,693,000	1,215,496,000	478,548,000
Barley:			
1920.....	7,600,000	189,332,000	135,083,000
1921.....	7,414,000	154,946,000	64,934,000
1922.....	7,390,000	186,118,000	97,751,000
Rye:			
1920.....	4,409,000	60,490,000	76,693,000
1921.....	4,528,000	61,675,000	43,014,000
1922.....	6,210,000	95,497,000	66,085,000
Buckwheat:			
1920.....	701,000	13,142,000	16,863,000
1921.....	680,000	14,207,000	11,540,000
1922.....	785,000	15,050,000	13,312,000
Flaxseed:			
1920.....	1,757,000	10,774,000	19,039,000
1921.....	1,108,000	8,029,000	11,648,000
1922.....	1,308,000	12,228,000	25,869,000
Rice:			
1920.....	1,336,000	52,066,000	62,036,000
1921.....	921,000	37,612,000	35,802,000
1922.....	1,055,000	41,965,000	41,836,000
Potatoes:			
1920.....	3,657,000	403,296,000	461,778,000
1921.....	3,941,000	361,659,000	398,362,000
1922.....	4,331,000	451,185,000	262,608,000
Sweet potatoes:			
1920.....	992,000	103,925,000	117,834,000
1921.....	1,066,000	98,654,000	86,894,000
1922.....	1,116,000	109,534,000	84,492,000
Hay, tame:		<i>Tons</i>	
1920.....	58,101,000	87,855,000	1,560,235,000
1921.....	58,769,000	82,379,000	997,527,000
1922.....	61,208,000	96,687,000	1,217,044,000
Hay, wild:			
1920.....	15,787,000	17,460,000	198,115,000
1921.....	15,632,000	15,391,000	101,991,000
1922.....	15,842,000	16,104,000	114,635,000
All hay:			
1920.....	73,888,000	105,315,000	1,758,350,000
1921.....	74,401,000	97,770,000	1,099,518,000
1922.....	77,050,000	112,791,000	1,331,679,000
Tobacco:		<i>Pounds</i>	
1920.....	1,960,000	1,582,225,000	335,675,000
1921.....	1,427,000	1,069,693,000	212,728,000
1922.....	1,725,000	1,342,840,000	306,179,000
Cotton:		<i>Bales</i>	
1920.....	35,878,000	13,439,603	933,658,000
1921.....	30,509,000	7,953,641	643,933,000
1922.....	33,742,000	9,964,000	1,192,461,000
Cotton seed:		<i>Tons</i>	
1920.....	.....	5,971,000	155,246,000
1921.....	.....	3,531,000	102,929,000
1922.....	.....	4,424,000	177,756,000

CROP AND YEAR	Acreage	Production	Farm value 1 Dec.
Clover seed:		<i>Bushels</i>	
1920.....	1,082,000	1,944,000	23,227,000
1921.....	889,000	1,538,000	16,529,000
1922.....	1,126,000	1,875,000	18,905,000
Sugar beets: ¹		<i>Tons</i>	
1921.....	815,000	7,782,000	49,626,000
1922.....	537,000	5,243,000	29,605,000
Beet sugar: ¹		<i>Short tons</i>	
1921.....	815,000	1,020,000	.....
1922.....	537,000	691,000	.....
Cane sugar (La.):			
1921.....	226,400	324,000	.....
1922.....	217,000	241,400	.....
Maple sugar and syrup (as sugar):		<i>Pounds</i>	
1921.....	15,219,000	24,178,000	6,214,000
1922.....	16,385,000	34,806,000	7,623,000
Sorghum syrup:		<i>Gallons</i>	
1920.....	536,000	49,505,000	52,943,000
1921.....	518,000	45,566,000	28,681,000
1922.....	448,000	36,532,000	25,946,000
Peanuts:		<i>Pounds</i>	
1920.....	1,181,000	841,474,000	44,256,000
1921.....	1,214,000	829,307,000	33,097,000
1922.....	986,000	623,507,000	29,222,000
Beans: ²		<i>Bushels</i>	
1920.....	847,000	9,185,000	27,134,000
1921.....	777,000	9,150,000	24,399,000
1922.....	1,043,000	11,893,000	44,429,000
Grain sorghums: ²			
1920.....	5,120,000	137,408,000	127,629,000
1921.....	4,635,000	113,990,000	44,575,000
1922.....	5,051,000	90,381,000	79,389,000
Broom corn: ²		<i>Tons</i>	
1920.....	275,500	36,500	4,605,000
1921.....	222,000	38,200	2,758,000
1922.....	253,000	34,500	7,614,000
Onions: ²		<i>Bushels</i>	
1921.....	57,900	14,406,000	18,856,000
1922.....	64,200	17,940,000	16,471,000
Cabbage: ²		<i>Tons</i>	
1921.....	103,300	673,900	16,612,000
1922.....	134,600	1,097,600	14,301,000
Hops: ²		<i>Pounds</i>	
1920.....	28,000	34,280,000	12,236,000
1921.....	27,000	29,340,000	7,080,000
1922.....	22,000	25,910,000	2,200,000
Cranberries: ²		<i>Barrels</i>	
1920.....	25,000	449,000	5,514,000
1921.....	25,000	384,000	6,526,000
1922.....	25,000	562,000	5,720,000
Apples, total:		<i>Bushels</i>	
1920.....	.....	223,677,000	256,699,000
1921.....	.....	99,002,000	166,343,000
1922.....	.....	203,628,000	202,102,000
Apples, commercial:		<i>Barrels</i>	
1920.....	.....	33,905,000	126,800,000
1921.....	.....	21,557,000	99,131,000
1922.....	.....	31,090,000	91,534,000
Peaches:		<i>Bushels</i>	
1920.....	.....	45,620,000	9,970,000
1921.....	.....	32,602,000	51,739,000
1922.....	.....	56,705,000	75,613,000
Pears:			
1920.....	.....	16,805,000	27,865,000
1921.....	.....	11,297,000	19,268,000
1922.....	.....	18,661,000	19,789,000
Oranges (two States):		<i>Boxes</i>	
1920.....	.....	29,700,000	64,908,000
1921.....	.....	20,300,000	49,175,000
1922.....	.....	24,900,000	61,395,000
Total:			
1920.....	347,847,300	.....	\$8,998,820,000
1921.....	348,435,600	.....	5,630,781,000
1922.....	348,969,800	.....	7,483,326,000

¹ Including beets grown in Canada for United States factories.

² Trees tapped.

³ Principal producing States.

⁴ Commercial crop.

World Crops.—The International Institute of Agriculture at Rome estimated the world wheat crop for 1922 at 2,932,000,000 bushels, compared with a recorded total of 2,288,000,000 bushels grown in 1917. The 1921 rye crop of the world, estimated by the United States Department of Agriculture, was 783,000,000, compared with 473,000,000 bushels grown in 1917. It was stated that the 1922 crop would probably materially exceed the 1921 crop. The world crop of corn grown in 1921 was estimated at 3,710,000,000 bushels, compared with 3,129,000,000 bushels raised in 1917. *The Trade Record* of The National City Bank gave the barley production in 1921 as 969,000,000 bushels, compared with an average annual production of slightly more than 1,000,000,000 bushels in the five years preceding 1921. The figures for 1921 and 1922 quoted, relate only to production in those countries from which continuous reports were received during and since the war and are not comparable with those of pre-war years, which included Russia, Turkey and other areas, for which figures are not now available. However, late in 1922, one estimate placed the total grain production of Russia during that year at approximately 2,000,000,000 poods (one pood equaling 36 pounds) against 1,600,000,000 poods in 1921 and 1,738,000,000 poods in 1920. The Russian total for 1922, it was stated, was only about one-half of the annual average for the five-year period preceding the outbreak of the World War.

FARMER-LABOR PARTY. The beginnings of an American Labor Party became somewhat more manifest after the Conference for Progressive Political Action, held in Cleveland 11-12 Dec. 1922. While the delegates from the various labor bodies and progressive and radical political organizations declined to endorse forthright an independent party of labor, they carried back to their groups two recommendations: (1) in States where primaries are held, Labor should try to capture the old political parties for its own candidates; (2) in all other States, Labor should set about, with the aid of the agricultural elements, to form an independent Farmer-Labor Party.

The Cleveland Conference, born out of a protest movement on the part of union labor and farmers against injunctions, unfavorable Supreme Court decisions, congressional and State legislation, was attended by representatives of the 16 standard railroad unions, the United Mine Workers of America, the Amalgamated Clothing Workers of America, the International Typographical Union, representing 2,000,000 workers; the Farmers' National Council, the Farmer-Labor League of America and the National Non-Partisan League, representing a million farmers, and by delegates from various State federations of labor and central labor bodies, the Farmer-Labor Party, the Socialist Party and a score of local unions. The conference refused to seat representatives of the Workers' Party, a frankly Communist political organization, on the ground that it was "un-American."

The Socialists, as well as the Communists and some progressive labor leaders, expressed disappointment at the failure of the conference to declare for an independent party of labor, after

the manner of the British Labor Party in which various factions of the political and industrial labor movement of England unite upon common candidates at every election. Observing that the majority of the delegates took unkindly to the idea of the immediate formation of a labor party, Socialists, headed by Morris Hillquit, devoted themselves to the task of obtaining support for a common candidate of labor for President in the next national elections. Direct election of President and vice-president by the people was also urged.

In 1922 the Farmer-Labor party succeeded in capturing a seat in the United States senate when Dr. Hendrik Shipstead, of Minnesota, defeated his Republican opponent by 84,000 votes. From the same State, the Farmer-Labor party sent a representative to the lower house of Congress. Senator-elect Lynn J. Frazier, of North Dakota, while classed as a Republican, is in actuality a Non-Partisan League candidate. The Non-Partisan League in North Dakota is akin to the Farmer-Labor party. The Farmer-Labor vote shows a moderate decline since 1920, but this is explained by the election of liberals who succeeded in capturing the primaries as Republican and Democratic candidates.

In the State of New York an alliance was effected by the Socialist party, the Farmer-Labor party and a half-hundred progressive trades unions; these organizations united on the same political candidates though retaining their freedom of action in propaganda, educational activities, etc. The total vote cast for the joint nominees showed a marked falling-off for these parties since 1920 though Charles P. Steinmetz, Socialist and Farmer-Labor candidate for State Engineer and Surveyor, the electrical "wizard," polled almost triple the vote of others on his party's State ticket.

Out of the National Labor party, organized in 1919, grew the Farmer-Labor party. The Labor party was formed out of various unattached units in Connecticut, New York, Pennsylvania, Indiana, Illinois and some other States. At the nominating convention in July 1920, after a unity program had been worked out with the Committee of 48, the name was changed to the Labor party. It had presidential electors on the ballot in 17 States. In some of these States the tickets endorsed by the Non-Partisan League were approved by the Farmer-Labor party and no candidates for State offices were named.

The platform of the Farmer-Labor party opposed anti-union injunctions, child labor, industrial courts and legislation making labor unions liable to civil suit in time of strike; it favored the 44-hour week, national, state and municipal ownership and control of public utilities and the necessities of life. It demanded freedom of speech and other traditional guarantees which, it claimed, had been interfered with during and since the war. Conservation of natural resources and government exploitation of hydro-electric power were other planks incorporated in the demands of the Farmer-Labor party in various States.

One of the outstanding features of the Farmer-Labor party is the provision in its constitution for the direct affiliation of local, State and national farmers' organizations, labor

unions and co-operative societies. To all such organizations full reports covering the finances and activities of the party are submitted regularly. Local organizations affiliate with city or county units of the party, state organizations with the State unit, and national organizations with the national party. Each is entitled to representatives in the party conventions, which insures that the views of the workers on the farms and in the cities will dominate the affairs of the party. Moreover, through the payment of a per capita tax, the party is maintained by the rank and file. In addition, regular political organizations are set up in all the political subdivisions of the States and nation. These are made up of dues-paying members. Local and State branches hold meetings, carry on campaigns and function in a general political way for the party. The Farmer-Labor party has a direct dues-paying membership of approximately 30,000. It publishes an official national party organ; in addition to this, many State and local branches have official organs. The Farmer-Labor party holds second place in Washington, South Dakota and Minnesota. In South Dakota it is called the Non-Partisan League party. The party has been endorsed by six international unions, seven State federations of labor and hundreds of city central labor bodies. It controls many municipalities in Illinois, Iowa, Washington and Pennsylvania.

FARMERS' CO-OPERATIVE ASSOCIATIONS. See AGRICULTURE IN THE UNITED STATES, subsection AGRICULTURAL LEGISLATION; CO-OPERATIVE MOVEMENT.

FARMERS' CO-OPERATIVE ORGANIZATIONS. See FARM BUREAU FEDERATION, AMERICAN.

FASCISMO, Italian political and social movement, sponsored by the Italian "National Fascista Party". The word "Fascismo" is derived from the word "Fasci" which is the Italian for the Latin "fasces", a bundle of rods used by the Roman lictors to denote authority, discipline and law. The origin of the National Fascista Party which succeeded to the "Fasci Italiani di combattimento", is undoubtedly political and military. The struggle waged by the interventionists from the fall of 1914 to 24 May 1915 (Italy's entrance into the World War), constitutes the passionate and polemical element. The war literature and the devaluation of victory constitutes the second element. The first meeting of a few citizens, dissatisfied with the result of victory, embodying in themselves all the lost hopes of a people morally and physically tired of the war, and of diplomatic and financial failures, took place at Milan on 23 March 1919. Benito Mussolini, who had dared to denounce in his editorials those who believed in a policy of non-resistance to the tergiversations of the Allies and the Bolsheviki invasion of Italy, was the guiding spirit. Less than 100 men took part in that first meeting. Few promises were exchanged—and soon kept. On 15 April, a few hundred Fascisti and Arditi, still in uniform, attacked and burned the *Avanti* (Socialist daily). That first offense, not rebuked by the Socialists, encouraged the Fascisti to further their aims, showing at once the lack of ability and the revo-

lutionary insensibility of the Socialist Party. The general strike of 19-20 July 1919, which was to take place the world over against the Treaty of Versailles, found the Fascisti ready to resist any demonstration other than peaceful. The D'Annunzio raid on Fiume got full support from the Fascisti, showing the sentimental and adventurous character of the new movement. The election of 1919, the first one at which the Fascisti voted as a bloc, proved a failure for the new party, only 4,000 voters being for Fascismo. The electoral failure, however, did not dismay the Fascisti, who improved their organization and prepared themselves for the next battles (1920). During such period their ranks and files increased considerably. At the Second Congress (24 May 1920) 250 Fasci participated. On that occasion Mussolini delivered an important speech, eliminating all possible misapprehensions as to the anti-constitutional character of the movement. During the fall of 1920, Fascismo had its first real development. The "red" occupation of factories, the Ancona riots, and the "Out of Albania" policy, increased the Fascisti strength.

In 1921 Fascismo spread to the rural sections. At the election of 16 May 1921, 35 deputies, members of the Fasci, were sent to Parliament. In November 1921, at the Rome Congress, it was decided to transform the movement into a National Party. The name taken was "National Fascista Party". Headquarters were transferred from Milan to Rome, the centre of Italian politics and of all organized parties in the kingdom. Michele Bianchi—former chief editor of *Popolo d'Italia*—was appointed secretary. The Central Committee was abolished and a "Direction of the Party" substituted therefor.

The year 1922 was characterized by the entrenchment of Fascismo in Italian life and activities. Such entrenchment, however, was accompanied by reprisals and violence. The attacks on Socialistic institutions and Deputy Miglioli at Cremona, in July, are some of the "punishments" inflicted by the Fascisti on Communists. The general strike of 1 Aug. 1922 found the Fascisti ready to oppose it at any cost and under any circumstances. The strike was proclaimed by the Central Committee of the Labor Alliance from Genoa, and was to have taken place all over Italy. However, it failed. In many instances the people—and some workingmen too—opposed it. In some cities, such as Bergamo, Florence, Naples, Pavia, etc., it was almost unnoticed. Postal, telegraphic and railroad service continued—although on a reduced scale. In Rome, Milan and Turin, Fascisti took over the street-car service. Unfortunately, many acts of outrage and sabotage were committed. Socialist municipalities were occupied by the Fascisti—Chambers of Labor were burned, Socialist organizations were plundered and Socialist leaders attacked and beaten.

On 2 August the Fascisti Party called for a cessation of the strike and ordered the immediate occupation by Fascisti forces of all capitals of provinces unless the Government enforced at once law and order. On 3 August, Palazzo Marino, the seat of the Socialist Administration of the city of Milan, was occupied and the Italian

flag raised on the building. Next day, however, the Fascisti turned the reins of administration over to a commissioner appointed by the Prefect of the Province of Milan. On the 8th, the demobilization of the Fascisti was ordered and an explanation of their conduct toward the strikers was given to the public.

On 6 September, a new meeting took place in Rome to study the organization of the Fasci in relation to the needs of Southern Italy and the Italian islands. On the 20th, the Fascisti assembled again at Udine. Mussolini there delivered one of his most important speeches, clearing several points questioned by the public in general, such as Fascisti intentions toward the Monarchy.

Early in October Trent and Bolzano were occupied. The Fascisti invaded and occupied the offices of the Housing Commissioner in Rome and forced the dismissal of all women clerks, replacing them with former service men. The Fascisti later sent a letter to Prime Minister Luigi Facta, endeavoring to justify their action by accusing the Housing Commissioner's office of dishonesty and incompetence. The letter further stated that the facts had often been placed before the Government, but no notice had been taken of them. The Fascisti said they were forced to take justice into their own hands.

It was the Naples Congress, however, that marked the advent of the Fascisti to power. Achille Beneditti—an Italian journalist—published such a good account of their ascendancy to power in *Giornale d'Italia*, 9 Nov. 1922, that I cannot refrain from quoting him: "The mental process of the revolutionary attempt dates back to the Fascisti victory against the general strike of last August (1922). A few weeks later, at the end of September, in Rome, in Via Montedoro, No. 28, seat of the Italian Syndicate of Co-operatives—the Direction of the Fascisti Party entrusted Mussolini to develop a larger political and military action for the seizure of power." Early in October Mussolini created the famous quadrumvirate with Bianchi, De Vecchi, Dr. Balbo and General Del Bono, giving them full military and political powers. When the Naples Congress took place, all plans had been laid, but no one, with the exception of the four men, knew anything about them.

At the Congress (24-26 Oct. 1922) well above 40,000 Fascisti in uniform and 50,000 civilians took part. Mussolini's speech on 24 October at San Carlo Theatre was the keynote. At Milan on 6 Oct. 1922, Mussolini had said: "In Italy there exist two governments—a fictitious one run by Facta, and a real one run by the Fascisti! The first of these must give way to the second." Later he said: "In November the Chamber must be dissolved. In December general elections must take place. If the Government will not do this, the Fascisti will do it."

At the same time it became known in Rome that Michele Bianchi, secretary-general of the Fascisti Party, had presented a sort of ultimatum to the Government, not only demanding the dissolution of the Chamber and ordering general elections, but also demanding that the elections be run on a new plan, by which the party polling the greatest number of votes should have three-fifths of the total number of seats, the remainder to be divided proportionately

among the remaining parties. The Fascisti, who felt sure of obtaining a majority, hoped in this way to obtain 321 seats in the Chamber, leaving only 214 for all the other parties put together. At Naples both Mussolini and his colleagues showed more aggressiveness. On 24 October he announced that he had already been asked what conditions the Fascisti demanded in order to accept participation in the Government, adding: "I demanded the portfolios of Foreign Affairs, War, Navy, Labor and Public Works."

Mussolini stated that he would not enter the Cabinet himself. The Government had offered the party ministerial posts without portfolios. The Fascisti leader added that several places as under secretaries of State had been tendered, but that he had indignantly refused them. Referring to the ruling house he said: "Italian unity has been strongly cemented by the House of Savoy." He was loudly applauded with cries of "Viva King Immanuel." "Democracy was useful during the nineteenth century," he continued, "but now it must be superseded by a superdemocracy which must create a new, powerful political structure in closer harmony with national needs." It was the desire of the Fascisti to pacify the country, he added, but no peace was possible unless adversaries accepted the conditions of the Fascisti. His party program consisted in the regeneration of the country, the resurrection of Southern Italy, the restoration of Italian prestige and the solution of the financial and economic problems. His utterances were greeted with frantic applause by the delegates.

As the Facta Government refused to give the Fascisti the portfolios desired, a hostile attitude developed against it which culminated in its resignation. Meanwhile Mussolini had called together all the military leaders of his organization and simultaneously had ordered all the military sections of the Fascisti to keep in readiness the 800,000 workers who had joined the Fascisti organization, and had been ordered to co-operate at an opportune moment with the military sections.

In Rome it was believed that either Orlando or Giolitti would be requested to organize a new Cabinet, which would include four or five Fascisti, but soon it became evident that the Fascisti were after full power.

On 27 October, important cities such as Florence, Pisa and Cremona were occupied by Fascisti, who deposed the state authorities and command. The famous "Black Shirt" march on Rome then was started. Manifestoes were distributed to the people reading as follows: "Officers, soldiers, citizens: The Fascisti movement is neither against the country nor against the King. We want his Majesty to be really King of Italy and not submit himself to State actions which are cowardly imposed on him by his present weak ministers. We march on to Rome to give Italy her full liberty, to give the Italian people an Italy such as was dreamed of by the half million dead in the great war and by our own dead, who continued at war during peace. Marching with the sincere desire of peace and love, our greatest shout shall always be 'Long live the army, long live the King and long live Italy.'"

Facta, however, although he had resigned,

wanted to "take care of the defense of Rome," and proposed to Victor Emmanuel to proclaim a state of siege all over the country. Fortunately, the King foresaw at once the tragedies that would come out of such a proclamation and, instead of acceding to Facta's request, called Mussolini to form a new Cabinet. This invitation was accepted, and the new Cabinet included well-known heroes such as General Diaz and Thaon di Renal. Mussolini's entrance into Rome and the following parade of the Fascisti organization were unforgettable even for Rome, so long accustomed to glories and triumphs. The country had found a new spirit.

Mussolini's first acts were to reassure the country as to Fascismo's aims, and to disband his powerful army. By 4 November—as a matter of fact—most Fascisti had returned home or were about to return. Such was the rise to power of Fascismo.

GIOVANNI SCHIAVO.

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. See CHURCHES OF CHRIST IN AMERICA, FEDERAL COUNCIL OF THE.

FEDERAL FARM LAND BANKS. See FARM LOAN SYSTEM, FEDERAL; also AGRICULTURE IN THE UNITED STATES, subsection AGRICULTURAL LEGISLATION.

FEDERAL RESERVE SYSTEM, a system of 12 regional banks the operations of which are co-ordinated under the supervision of a central board at Washington (Federal Reserve Board) in such a way that while they are separately managed and serve the diverse interests of their respective districts they practically constitute one central banking system, serving the United States as the Bank of England and the Bank of France serve their respective countries. The System was inaugurated in 1914. During 1922 the act creating the Board was so amended as to provide for the appointment thereon of a representative of the agricultural interests. Under another amendment to the act, State banks may enter the Federal Reserve System when their capital is 60 per cent of the amount required of National banks, provided that within reasonable time the capital be increased to the amount required of National banks. Another amendment provides that acceptances may be discounted by Federal Reserve Banks for 90 days but that such term may be extended to six months if secured by warehouse receipts on readily marketable staples. Likewise Federal Reserve Banks are now authorized to discount agricultural paper for nine months instead of six. On 12 Jan. 1923 Daniel H. Crissinger, of Marion, Ohio, at that time Comptroller of the Currency, was nominated by President Harding as Governor of the Federal Reserve Board to succeed W. P. G. Harding, whose term had expired in August 1922. At the same time the President nominated Milo D. Campbell, of Michigan, as agriculture's representative on the Board. Henry M. Dawes of Chicago was subsequently named as Comptroller of the Currency in the place of Mr. Crissinger. Mr. Campbell dropped dead while playing golf on the course of a Washington club on 22 March 1923. Secretary of the Treasury A. W. Mellon,

is chairman of the Board; Comptroller of the Currency Dawes, like the Secretary of the Treasury, is an ex officio member. In addition to Mr. Mellon, Mr. Crissinger and Mr. Dawes, the other members of the Board early in 1923 were: Edmund Platt, vice-governor; Adolph C. Miller, Charles S. Hamlin and John R. Mitchell. Secretary, W. W. Hoxton. The Federal Reserve System has approximately 10,000 members and its expenses in 1922 amounted to \$29,559,343. The net earnings of the 12 banks in that year totaled \$20,931,396, compared with \$86,798,540 in 1921 and \$29,889,307 in 1920. Dividends paid amounted in 1922 to \$6,307,035; franchise taxes paid to the government totaled \$7,450,543 and \$2,740,158 was transferred to surplus. The reserve ratio at the end of the year was 72.1 per cent compared with 71.1 per cent at the beginning. The 12 Federal Reserve Banks are located in the following cities: Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, Saint Louis, Minneapolis, Kansas City, Dallas, and San Francisco.

Between 27 Nov. 1914 (the year of its inauguration) and 25 Oct. 1922, the resources of the Federal Reserve System increased from \$270,018,000 to \$5,065,095,000, according to the last annual report of the Comptroller of the Currency. On the date last mentioned the assets of the System were given as follows: Gold, \$3,085,000,000; other currency, \$127,000,000; bills discounted and bought, \$729,000,000; United States securities, \$409,000,000. Liabilities, on the same date, were: Capital, \$106,000,000; surplus, \$215,000,000; gross deposits \$2,382,000,000; circulation, \$2,337,000,000. Federal Reserve notes outstanding showed a reduction during the year of \$26,784,000; the amount outstanding on 25 Oct. 1922 being \$2,688,822,000, of which \$2,124,432,000 was secured by gold and the balance by commercial or other eligible paper. In the period indicated the ratio of notes secured by gold was increased from \$1,708,670,000 to \$2,124,432,000 while the amount of notes secured by commercial and other eligible papers was reduced from \$1,006,936,000 to \$564,390,000. The amount of mutilated Federal Reserve notes received and destroyed from the organization of the banks to 31 Oct. 1922 was \$7,820,756,340; the amount in vaults for destruction on that date was \$7,657,050. Federal Reserve notes are secured by the deposit of United States bonds with the Treasurer of the United States, or in accordance with the act of 23 April 1918, known as the Pittman Act, by United States certificates of indebtedness. Federal Reserve notes issued during the year which ended 31 Oct. 1922 totaled \$761,052,000; notes redeemed during the year totaled \$704,847,600.

FEDERAL TERRITORY, Australian, a territory of the Commonwealth of Australia set off from New South Wales in 1911. It has an area of 940 square miles and a population of 2,572. Yass-Canberra, the proposed seat of the Commonwealth Government lies within the Federal Territory. The project of transferring the seat of the Commonwealth Government to the Territory was opposed in 1922 by the financial and labor interests and at the close of the year it might be said that it was for the time being in abeyance.

FEDERATED FRUIT AND VEGETABLE GROWERS, Inc. See **HORTICULTURE**.

FEDERATED MALAY STATES, British protectorates which occupy a large part of the Malay Peninsula and consist of Perak, Negri Sembilan, Pahang and Selangor. The areas of these states are as follows: Perak, 7,800 square miles; Negri Sembilan, 2,550 square miles; Selangor, 3,156 square miles; and Pahang, 14,000 square miles. The total population is 1,100,000, of whom 420,000 are Malays, 433,000 are Chinese and about 3,000 Europeans. Kuala Lumpur in Selangor is the largest town with 60,000 inhabitants. The total number of schools in the states is 560 with an attendance of 29,000. About \$700,000 is expended annually on education. The laws made by the Federal Council, composed of the British High Commissioner as president, the chief secretary, the sultans of Perak, Pahang and Selangor and the Yang di per Tuan Besar of Negri Sembilan, the four British residents, the legal and financial advisers and six additional members. In 1920 the revenue of the states was \$38,677,676 and the expenditure \$53,413,679. The public debt is \$7,960,000.

The states produce cocoanuts, rubber, sugar, tapioca, pepper, and rice. Rubber is under extensive cultivation, about 500,000 acres being devoted to this crop at present and the yearly output approximately 100,000 tons. About 1,000,000 tons of timber are taken annually from the forests for export. The mining of tin is well developed, the export in 1920 amounting to 35,000 tons. In the same year, 12,283 ounces of gold were produced. Many other minerals are found, such as lead, copper, iron, manganese, wolfram, silver, zinc, arsenic and mercury. Coal also is found in workable quantities. About 90,000 are engaged in mining. The states import rice, tobacco, textiles, milk, live stock, oil, hardware and machinery. The chief exports are rubber, copra, tin and tin ore, timber and hides. In the four states there are 2,500 miles of metalled roads and 175 miles of unmetalled roads. There are 1,003 miles of railway open for traffic and several branches and connecting lines are under construction. There are 98 post-offices in the four states, 2,502 miles of telegraphs and telephone lines. The current money is the Straits Settlements dollar which is worth \$0.55 in American currency.

FENCING. See **SPORTS**.

FERRO-MANGANESE. See **METALLURGY**.

FERTILIZER. The volume of business in this industry was fairly large in 1921 and could be vastly larger in 1923 if the mixers of fertilizers dared to give credit to all who would buy. But the existence of a large body of overdue and unpaid notes of 1922, 1921 and even 1920, holds them back, and mixing plants are run at only about half capacity. Perhaps the most encouraging condition is the activity of the National Fertilizer Association and of various government and State officials, together with agricultural college experts, in working out the best standard mixers for various soils, so that the farmer can readily buy what is best suited to his land and crops. Ordinary barnyard manure is a complete fertilizer, but badly balanced,

requiring addition of phosphorus. Information as how to make the most of home manure by correct addition of acid phosphate is made available. And in the Middle West, a dozen of the best soil analyses have been passed upon, and are given away. New England followed suit, and at a convention of agronomists in Boston, 31 Dec. 1922, adopted "the New England Standard Nine" fertilizers. The Middle Atlantic States took similar action, and before long standard fertilizers, best adapted to individual localities anywhere in the United States, will be available. This scientific action is regarded as certain to increase crops as fast as put into practice.

One of the most important soil constituents is nitrate of soda, which comes mostly from Chile. To secure a larger supply for munition purposes, the United States went largely into the business during the World War, and after hostilities were ended had on hand an immense stock of nitrate. This is offered for sale at intervals, and has a rather pronounced bearish effect on the market. During December 1922, 25,000 tons were sold at between \$47 and \$48 a ton. On 8 Jan. 1923, 10,000 tons were sold at an average of \$44 a ton. Ninety-four per cent of the offering was taken by 26 bidders, W. R. Grace and Company securing the most.

Florida is the principal source of phosphate, and the production there for two years follows, in long tons:

	1921	1922
Hard phosphate rock, foreign.....	174,000	198,000
Hard phosphate rock, domestic.....	.....	.....
Land pebble phosphate, foreign.....	568,000	520,000
Land pebble phosphate, domestic.....	547,000	701,000
All-rail, United States.....	310,000	265,000
Totals.....	1,599,000	1,684,000

The phosphate industry is liable to change materially because of the discovery and development of a very large supply (estimated at 100,000,000 tons or more) on the islands of Nauru and Ocean, lying 26 miles below the equator and about 2,200 miles from New Zealand. This supply is very high grade, and easily mined and shipped, lying right on the surface, near the water.

Pyrites is imported mostly from Spain. The United States used to buy 1,500,000 gross tons annually, but now imports less than 500,000 tons, while the local production is near 250,000 tons. Sulphur is largely taking its place in agriculture. The low cost production of sulphur in the United States during the past three years has so increased the local supply that this country has taken the lead in production from Italy, which is now second, Japan being the third largest producer. The United States exports for 1922 (partly estimated) were 540,000 tons, as against 380,000 for 1921. The largest buyers were Canada, France, Germany, Sweden and Australia.

The leading fertilizer mixers of the United States quoted prices in January, 1923, that were regarded as rather low. Acid phosphate was offered at \$9.50 per ton, sulphate ammonia at \$3.50 per 100 pounds, Japan taking 4,500 tons at that price; cottonseed meal, rich in ammonia, sold at \$41 to \$42 f. o. b. Fish scrap was quoted

at \$3.85 and blood at \$4.75, bones at \$22 to \$25 a ton.

The potash production of the United States has been small for two years, as large stocks are held; but in 1922 Germany sent us 91,000 tons within nine months, evidently trying to realize something on her surplus. Statistics compiled by the Federal Bureau of Census show that there were 588 establishments engaged in the manufacture of fertilizers in the United States in 1921, 584 in 1919 and 734 in 1914. The products turned out by these concerns were valued at \$180,374,800 in 1921, \$281,143,600 in 1919, and \$153,196,100 in 1914. The South Central and South Atlantic States reported approximately 62 per cent of the value of products in 1921, 73 per cent in 1919 and 70 per cent in 1914. The North Central, Middle Atlantic and New England States reported 35 per cent in 1921, 25 per cent in 1919 and 28 per cent in 1914, while the Mountain and Pacific States reported 2.5 per cent, 1.5 per cent and 1.6 per cent respectively. The total number of persons, proprietors, firm members, salaried employees, and wage earners, engaged in the industry in 1921 was 21,438; 32,522 in 1919 and 28,301 in 1914. Salaries and wages paid totaled \$25,845,500 in 1921, \$36,934,700 in 1919 and \$17,774,400 in 1914. The amount of fertilizer turned out during the three years referred to was 5,992,633 tons in 1921, 8,237,011 tons in 1919 and 8,432,206 tons in 1914. The total production of superphosphates was 3,483,704 tons in 1921, 5,831,767 tons in 1919 and 4,483,607 tons in 1914. Complete fertilizers produced in 1921 totaled 2,984,494 tons. Ammoniated fertilizers manufactured in 1921 totaled 339,190 tons. Subsidiary products turned out by the fertilizer establishments had a value of \$7,817,900 in 1921; \$25,380,300 in 1919, and \$15,821,400 in 1914.

Exports of fertilizer and fertilizer materials in 1922 totaled 935,008 tons, valued at \$16,648,372, as compared with exports of 895,443 tons, valued at \$16,117,123 in 1921.

See also ACIDS, NITRIC, SULPHURIC AND MIXED; CHEMICAL MANUFACTURING; POTASH.

FEVER, Malarial, Typhoid, Typhus, Yellow. See MEDICINE AND SURGERY, ADVANCEMENT OF; PUBLIC HEALTH SERVICE, UNITED STATES; ROCKEFELLER FOUNDATION.

FICTION. See LITERATURE.

FIELD, Hamilton Easter, American art editor and critic: b. Brooklyn, N. Y., 21 April 1873; d. there, 9 April 1922. He was educated at the Brooklyn Polytechnic Institute, Columbia University, Harvard University, and the École des Beaux Arts, Paris, and studied under Gerome, Raphael Collin and Fantin-Latour. He was a director of the Thurnscoe School of Modern Art, Ogonquint, Me., the Ardsley School of Modern Art, Brooklyn, and also of the Ardsley Studios, Brooklyn. At the time of his death he had been art editor of the *Brooklyn Daily Eagle* since 1919. He was also associate editor of *Arts and Decoration* and president of the Brooklyn Society of Artists; life member of the Museum of French Art; director of the China Society of America, and until his resignation a month before his death, because of objection to his criticism of the alleged publicity

methods of certain members of the organization, was, for a number of years, a member and director of the Society of Independent Artists. He published 'The Technique of Oil Painting' (1913).

FIELD AND TRACK ATHLETICS. See SPORTS.

FIGLI D'ITALIA. See ITALY, SONS OF.

FIJI ISLANDS, an island group in the South Pacific consisting of about 250 islands and forming a crown colony of Great Britain. The largest islands are Viti Levu and Vanua Levu. The total area is 7,435 square miles and the population 162,604, of whom 88,000 are Fijians and 59,000 are Indians. There are Christian missions of the Methodist and Roman Catholic churches attended by about 90,000 natives. These two creeds also maintain schools. In 1920 the Catholics had 122 schools with 2,700 pupils and the Methodists 863 schools with 13,400 pupils. In addition there are a few schools for Europeans. The revenue in 1920 amounted to \$2,400,000 and the expenditure to \$3,000,000. Revenues are derived from customs, shipping dues, native taxes, court fees and the postal service. The public debt of the colony in 1920 was \$1,500,000. The islands produce bananas, coconuts, Indian corn, sugarcane, tobacco, tea, rice, rubber and sisal hemp. There are six sugar mills, tea factory, two soap factories, four rice mills, one rubber mill, five fibre mills and 22 boat building yards. In 1920 the value of the imports was \$8,000,000 and that of the exports \$14,000,000. The colony has regular steamship connection with Australia and Canada. The total tonnage entered and cleared in 1920 was 671,790. The colony is governed by an officer called the governor, appointed by the crown, and assisted by an executive council consisting of the colonial secretary, the attorney-general, other official members appointed by the governor, and two members selected from the members of a legislative council. The governor of Fiji in 1922 was Sir Cecil Hunter Rodwell. The governor is also high commissioner for the western Pacific.

FILTRATION PROCESSES, Improvements in. See CHEMICAL MANUFACTURING.

FINANCE. While it may be true, as the *Boston News Bureau* asserted, that "from practically all angles, 1922 can be recorded as the renaissance of prosperity," it is nevertheless a fact that, despite a general improvement in economic conditions throughout the United States, the year closed leaving unsettled a great many of the financial problems which came upon the world as a result of the Great War. Nor, is it believed that real prosperity will be experienced by any of the countries until the problems referred to have been solved, not even by the United States. The European situation, at the close of the year, is dealt with in detail in the article EUROPEAN DEBTS. So far as the United States is concerned, its return to prosperity was far out of proportion to that of the rest of the world, notwithstanding the fact that during the year economic progress was materially impeded by three of the greatest strikes in the country's history—the textile strike, the coal strike and the railway shopmen's strike. The iron and steel

industry showed a decided improvement during the year, the output being nearly double that of 1921. The building boom of 1922 was unprecedented, while automobile production reached record figures. The agricultural situation showed some improvement—but conditions were by no means satisfactory to the farmers. In almost all lines of industry there was an upward trend from the depressed conditions of the year before, especially during the last six months of the year.

From a strictly financial viewpoint one of the outstanding features of the year in the United States was the number and value of stock dividends declared. According to the *New York Times*, stock dividends declared by 139 companies aggregated in value \$1,484,107,719. A list prepared by the Federal Trade Commission for Senator Smith W. Brookhart gave the total value of such dividend declarations made during the year as \$2,149,151,425, the figures including small as well as large corporations. The largest stock dividend declared by any one company was that of the Standard Oil Company of New Jersey, amounting to \$393,353,200; the Standard Oil Company of New York paid out \$150,000,000; the Standard Oil Company of Indiana, \$107,360,455; the Standard Oil Company of California, \$100,971,111. Up to 22 November 10 Standard Oil subsidiaries had either declared or announced their intention of declaring stock dividends aggregating \$752,288,415. Other companies which declared stock dividends of more than \$50,000,000 include the Gulf Oil Corporation and the Magnolia Petroleum Company. The Atlantic Refining Company distributed a stock dividend amounting to \$45,000,000; the Vacuum Oil Company a stock dividend of \$45,000,000; the Standard Steel Company, \$36,000,000; the Victor Talking Machine Company, \$29,994,000, and the Ohio Oil Company, \$45,000,000. The various declarations ran all the way from 1 per cent to 3,333 per cent. Most of these declarations were made, it is believed, because of the fear that Congress would pass a law making the surpluses of corporations subject to income tax levies. Under the existing law stock dividends are not taxable.

During the year industrial corporations of the United States distributed in cash dividends \$525,140,500 and paid out in interest charges \$50,900,000. The dividend disbursements compare with \$542,352,714 in 1921 and \$601,806,277 in 1920. Steam and electric railways paid in cash dividends \$351,463,800 and in interest approximately \$162,000,000. These dividend payments compare with \$356,753,900 in 1921 and \$363,130,222 in 1920.

Stocks traded in on the New York Stock Exchange during 1922 totaled 262,472,100 shares as compared with 170,680,100 shares in 1921. Sales of industrial stocks in 1922 totaled 221,876,800 shares as compared with 154,562,500 shares in 1921. Sales of railroad shares totaled 40,595,300 in 1922 as compared with 25,117,600 shares in 1921. The record year was 1919, when 320,046,100 shares of all kinds of stock were traded in on the New York Stock Exchange. Bond sales for 1922 on the New York Stock Exchange had an aggregate value of \$4,098,696,027 as compared with \$3,504,814,845 in 1921. Stocks and bonds listed on the New York Stock Exchange during 1922 had an aggregate value of \$4,111,492,615

compared with listings totaling \$3,047,367,555 in 1917, which was a record year until 1922 took first place. The listings of 1922 exceeded those of 1921 by \$1,930,000,000, and was due in a large measure to the stock dividend declarations referred to above. Of the 1922 listings, Dow, Jones and Company estimated that \$2,075,784,215 represented stocks and \$2,035,708,400 represented bonds. New railroad capital flotations in 1922 totaled, according to *The Annualist*, \$621,658,850 against \$272,920,220 in 1921.

New corporate financing in 1922 totaled, according to the *Boston News Bureau*, \$3,944,426,000, of which \$3,200,176,000 was for new capital and \$744,251,000 for refunding, as against \$2,780,874,000 of new capital and \$574,671,000 for refunding in 1921. State and municipal financing, in 1922, was estimated by the *Daily Bond Buyer* at \$1,177,699,000, while foreign loans negotiated in the United States during the year were estimated by the Guaranty Trust Company at a total of \$869,992,000. The latter figures include foreign government and municipal loans aggregating \$680,565,000, foreign corporation borrowings totaling \$153,206,000 and loans of American corporations abroad totaled \$36,221,000. Foreign financing in 1921 amounted to \$625,820,000.

Charters for new enterprises, filed during 1922, under the laws of the principal States, involved, according to the *Journal of Commerce*, the sum of \$8,400,153,390 as compared with \$7,959,111,400 in 1921, and \$14,999,044,200 in 1920, these figures covering concerns with authorized capital of \$100,000 and over.

A subject to which much attention was given during the year was that of tax-exempt securities, including State, municipal and farm loan bonds. Since the World War, State and municipal security issues have increased approximately three times as compared with the output prior to the war. Dr. Edwin R. A. Seligman of Columbia University, in an article in the *New York Times*, estimated that from 1919–26 there will have been outstanding an amount of tax-exempt securities ranging from \$25,000,000,000 to \$35,000,000,000 to be reduced in 1926, unless the Federal government issues more tax-exempt bonds, to between \$18,000,000,000 and \$21,000,000,000. As a result of this situation Secretary Mellon of the United States Treasury recommended the adoption of a Constitutional amendment to forbid the issuance of tax-free securities, and on 23 Jan. 1923 the House of Representatives, by a vote of 223 to 101, adopted a resolution proposing to submit such amendment to the legislatures of the various States for ratification. Congress adjourned, however, without the Senate having taken any action on the resolution.

New security issues in England during 1922 totaled £584,950,914 as compared with £392,799,723 in 1921. Out of the total of new securities issued in 1922 in England, £441,432,391 were government loans, £17,795,631 were municipal loans and £125,722,892 were industrial and railway issues. Checks, bills, etc., paid at the London Bankers' Clearing House in 1922 totaled £37,161,461,000; city clearing amounted to £32,780,636,000. See also BANKING; BUSINESS FAILURES; EUROPEAN COUNTRIES, BUDGET DEFICITS OF; EUROPEAN COUNTRIES, NOTE CIRCULATION AND GOLD RESERVES OF BANKS OF ISSUE; FARM LOAN SYSTEM, FEDERAL; NATIONAL DEBTS OF

THE WORLD; RURAL CREDITS; SAVINGS BANKS; TRUST COMPANIES.

FINEGAN, Thomas Edward, American educator: b. West Fulton, Schoharie County, N. Y., 28 Sept. 1866. He attended the public schools of West Fulton and the Cooperstown High School, then entered the State College for Teachers at Albany, N. Y., from which he was graduated in 1889. Thereafter, he read law and was admitted to the New York bar in 1894. He taught in the public schools of New York State for six years, supervised public schools for two years, and, in 1894, entered the State Education Department of New York with which he was connected for twenty-seven years. He organized the work relating to the examination and certification of teachers in the schools of the State and supervised this work for twelve years. He was in charge of the law division, passing upon legal questions and preparing judicial opinions on school questions for four years. He was made assistant commissioner of elementary education in 1908 and deputy commissioner of education in 1915; he was acting commissioner of education, 1918-19 and was in charge of the supervision of elementary education in New York State, 1908-19, which included supervision of all elementary schools, State normal schools, city training schools, training classes, the certification of teachers, and the 207 district superintendents in charge of the rural schools and of the enforcement of the following statutes:

Compulsory education law, medical inspection law, physical training law, laws relating to the education of physically handicapped and mentally deficient children, and the Americanization law. Doctor Finegan holds the degree of M.A. from Hamilton College, the degree of Pd.D. from the State College for Teachers, Albany, N. Y., the degree of Litt.D. from the University of Pennsylvania, and the degree of LL.D. from Colgate University, Hamilton College, Grove City College, Dartmouth College and the University of Maine. On 1 June 1919 he became State superintendent of public instruction in Pennsylvania where his progressive methods soon placed him in the front rank of the school superintendents of the country. In 1921 he secured the enactment by the General Assembly of Pennsylvania of a law requiring every public school teacher to be a graduate of a high school, giving a four-year course, and, in addition, to have had at least two years normal school training. The same measure increased the salaries of all teachers meeting the foregoing qualifications. Under Doctor Finegan's direction, there is being included in the courses of study in the Pennsylvania schools instruction in citizenship and democracy; provision has been made also to include the study of music and art, to correct speech defects and for special education for those types of children who are unable to take standard courses. Under his supervision, the State department of public instruction, in 1920-21, made a survey of the Philadelphia school system. He has arranged for summer courses for teachers in thirteen State normal schools and in twelve universities and colleges. Approximately 12,000 teachers attend these sum-

mer courses. Doctor Finegan is author of the following articles in the 'Encyclopedia Americana': "Education, Compulsory," "Education Rural," "Education of the Feeble-Minded," "Education of Immigrants," "Education of the Physically Handicapped," "Health Education," "Lancasterian Schools," "State Systems of Education," "Teachers, Professional Training of."

His brochures on educational subjects include the following: "Uniformity of Standards in School Administration"; "The Establishment and Development of New York's School System"; "The Organization of City School Systems"; "Some of New York's Contributions to the Development and Standardization of Normal Schools"; "The Organization of a Modern Rural School"; "Medical Inspection in the Public Schools"; "Fundamental Principle in School Administration"; "Struggle for Free Schools in New York"; "The Obligations and Opportunities of Superintendents"; "Important Features in Rural Education"; "The Life and Services of Andrew S. Draper"; "Colonial Schools and Colleges in New York"; "The Function of the Modern School"; "Education and the State"; "Training for National Service"; "The Place of the Nation in Education"; "What Service Shall the Public Schools Render"; "A Practical Program for the Development of the Rural Schools"; "The Education of the Illiterate Immigrant"; "Our Army of Illiterates"; "Pennsylvania's Educational Program"; "The State Program in Education and Its Bearing on the National Program"; "Co-operation Between the State and the School District."

Doctor Finegan edited a volume of 500 pages on 'Agencies for the Training of Teachers in New York State,' as well as volumes on 'The Development of Free Schools in New York,' and 'The Township Administration of Schools.'

FINLAND, an independent republic of northern Europe, formerly a Russian grand duchy, bounded north by Norway and the Arctic Ocean, south by the Baltic Sea and Russia, east by Russia and west by the Gulf of Bothnia and Sweden.

Area and Population.—The area and population of the several divisions of the republic are as follows:

DIVISION	Area, square miles	Popu- lation (31 Dec., 1919)
Uusimaa.....	4,705	427,751
Turku-Pori.....	8,832	490,671
Åland.....	557	27,351
Häme.....	8,102	357,106
Vimpuri.....	16,691	564,512
Mikkeli.....	9,002	208,818
Kuopio.....	17,014	352,585
Vaasa.....	15,969	544,656
Oulu.....	64,854	366,787
Petsamo.....	3,860	1,700
Total.....	149,586	3,335,237

By 31 Dec. 1921 it was estimated that this total had increased to 3,367,542. The chief towns with their populations are: Helsingfors, 188,922;

Turku or Abo, 59,914; Tammerfors, 46,819; Viborg, 24,479; Vasa, 24,479; Oulu, 21,216; Kuopio, 18,137; and Bjorneborg, 17,045.

Religion.—The national church is the Evangelical Lutheran but there is full liberty guaranteed to those professing other faiths. There are about 56,000 Greek Orthodox Catholics and about 650 Roman Catholics. There are four bishoprics of the national church and an archbishop at Turku.

Education.—The educational establishments of all grades are as follows:

SCHOOL	Number Schools	Pupils
Elementary (country):		
Higher elementary.....	3, 639	179, 389
Lower elementary.....	1, 262	41, 104
Infant schools.....	1, 543	197, 721
Elementary (cities):		
Higher elementary.....	1, 262	41, 104
Secondary:		
Preparatory.....	35	2, 096
Navigation.....	7	97
Commercial.....	21	1, 584
Trade.....	31	2, 404
Technical.....	13	678
Arts and crafts.....	107	3, 233
Agricultural.....	35	3, 227
Dairy.....	3	
Cattle management.....	35	
Horticultural.....	41	139
Forestry.....	5	
Secondary:		
Lyceums.....	81	20, 241
Middle schools.....	42	4, 721
Girls' colleges.....	23	4, 416
Extension.....	17	694
People's high.....	42	2, 307
Training:		
Elementary, teachers.....	8	713
Infant school, teachers.....	6	293
Higher learning:		
Technical.....	1	602
Commercial high.....	2	158
Universities:		
Helsingfors.....		2, 578
Turku (Swedish).....		130

Agriculture.—About 9 per cent of the land area of the republic is under cultivation, yet agriculture is the principal occupation of the inhabitants. The chief crops are rye, barley, oats, potatoes, hay and flax. Dairying is a flourishing industry, the annual output of butter is about 300,000,000 pounds. The live stock industry is well developed and there are about 1,250,000 head of horned cattle in the republic. Sheep and goats number about 1,000,000 and swine about 125,000. The country has extensive pine forests; in fact over one-half of the area of the country is covered with these forests of pine. There are nearly 2,000,000 tree trunks. There are 279 saw mills and the timber industry gives employment to 20,000 workers.

Other Industries.—The republic has over 4,000 factories which give employment to 83,000 workers and yield an annual product valued at 1,500,000,000 marks. These establishments include iron and mechanical works, textile mills, woodworking factories, paper mills, leather works, chemical factories, tobacco factories, distilleries and breweries, electric, gas and water supply plants.

Commerce.—Finland's foreign trade during 1922 shows the strong economic position attained by that country. The total value of exports

was 4,461,000,000 Finnish marks, or \$95,600,000 at an average exchange rate of 46.7 Finnish marks to the dollar; imports amounted to 3,953,000,000 Finnish marks, or \$84,700,000. The favorable balance of 508,000,000 marks, or \$10,900,000, was the first recorded in the history of Finnish trade statistics. In 1913 imports were valued at 495,400,000 marks and exports at 404,800,000 marks, or \$96,600,000 and \$78,100,000, respectively (conversion at par, 1 mark=19.3 cents). The favorable balance of 1922 contrasts also with an unfavorable balance of 196,000,000 marks in 1921 and of 700,000,000 marks in 1920. If prices of 1913 be applied to the 1922 exports and imports, it will be found that exports were 93.4 per cent of those in 1913 or nearly normal, while imports were smaller, reaching only 74.4 per cent of the 1913 imports. The most important import values were: Textiles, finished and partly finished, 862,200,000 Finnish marks; cereals, 703,400,000 marks; colonial products, 551,500,000 marks; metals and metal goods, 403,600,000 marks; machinery, 203,900,000 marks; oils and fats, 177,500,000 marks; stone and earthenware, 139,600,000 marks; drugs and chemicals, 121,211,000 marks; asphalt, tar, and resin, 77,700,000 marks; and fertilizers, 72,800,000 marks. The values of the most important exports in 1922 were: Timber, 2,292,700,000 Finnish marks; pulp, cardboard, and paper, 1,430,300,000 marks; animal products, mostly butter, 435,700,000 marks; and hides, skins, and leather goods, 76,900,000 marks.

Communications.—Finland has 2,685 miles of railways of which all but 186 miles are the property of the state. The gauge is 4.9 feet. There are many lakes connected one with another by canals and the whole system connected with the Gulf of Finland. There are 2,685 miles of improved roadways and 2,500 miles of secondary roadways. There are 2,525 post offices, 10,517 miles of telegraph and 3,230 miles of telephone lines.

Army.—Military service is universal and compulsory and begins with the 17th year and ends with the 45th. Active service begins at the age of 20 and continues for 18 months. The total peace establishment is 100,265 officers and men.

Navy.—Finland has a few Russian ships which she uses as training vessels. At present the personnel of the navy is 71 officers, 79 civil officers and 1,028 petty officers and men. There are three regiments of coast artillery.

Finances.—The state budget for the year 1922 comprised a revenue of 2,065,660,000 marks and an expenditure of 1,885,300,000 marks. The total debt of the republic in 1922 amounted to the huge sum of 1,934,897,323 marks, of which 536,309,365 represented foreign loans, 955,146,800 national loans and 443,441,158 short-dated loans.

The budget for 1923, as passed by Parliament, authorizes expenditures of 2,633,500,000 Finnish marks, or roughly \$65,900,000 at the current exchange rate of 2½ cents to one Finnish mark.

Ordinary revenues were estimated at 2,448,000,000 marks, exceeding ordinary expenditures by 248,000,000 marks; extraordinary expenditures, however, cause an estimated deficit of 167,300,000 marks. This deficit is to be covered by state funds accumulated in previous years,

no loans or currency issues being contemplated, according to advices received by the United States Department of Commerce.

This is the third year in which the Finnish budget is balanced without loans or paper money issues for ordinary state expenditures. A balance of about 500,000,000 marks (after allowing 167,300,000 marks for balancing the 1923 budget) had been accumulated at the end of 1922 as a result of ordinary revenues in 1921 and 1922 exceeding the estimated amounts, and from the proceeds of certain loans of moderate amount. In 1922 the import duties exceeded the estimates by 237,000,000 marks, the railroad receipts by 110,000,000, the revenue from state forests by 45,000,000, and the income and property tax by 25,000,000 marks.

Government.—On 6 Dec. 1917 the Finnish house of representatives proclaimed the independence of the Finnish nation and soon thereafter it was recognized by the Powers. There is universal suffrage for all who have attained their 24th year. The legislature consists of one chamber of 200 members chosen by proportional and direct election. The term of representatives is three years. The president is elected for six years by the votes of the citizens. In him is vested the executive power. He is assisted by a cabinet of 12 ministers with the usual portfolios. The president in office in 1922 was Dr. Kaarlo Juho Staalberg, elected July 1919.

History.—At the beginning of 1922 there was friction between Finland and Soviet Russia, the latter accusing Finland of fomenting the Karelian insurrection. The Russian government massed troops on the frontier and on 7 January won a victory over the Finnish White Bands that infested the border. The controversy was referred by Finland to the Council of the League of Nations, which on 11 January undertook formally to guarantee the neutrality of the Åland Islands. Finland was empowered to act in defense of the islands in case their neutrality is threatened. Finland's action was endorsed by the new Baltic states, Esthonia, Latvia, Lithuania, Poland and also by Rumania. The League of Nations appointed Poland as arbitrator between Soviet Russia and Finland. The Finnish government took care of great numbers of the Karelian refugees who fled from the Red armies. The government in February passed a defense bill imposing a year's training and active service for every man of military age. The premier made known the necessity for such a measure because of the menace of the Bolshevik armies on the country's eastern front. The sole opposition to the measure came from the Agrarians and the Socialists. On 14 February, Heikki Ritavuori, minister of the interior, was slain at the hand of a demented youth. The crime was without political significance although the minister was very unpopular because of his amnesty measures in behalf of the Red rebels. In the middle of March Finland participated at the conference of the Baltic states (Lithuania excepted) at Warsaw in order to prepare a common policy with regard to Russia to be adhered to at the forthcoming Genoa Conference. The meeting also gave opportunity for the conclusion of a commercial agreement between the assembled states. The

conference agreed upon mutual recognition of the peace treaties concluded severally with Russia and greatly strengthened their economic and other relations. On 24 March a mixed commission met in Helsingfors to continue the boundary negotiations between Finland and Soviet Russia. Later the same month Finnish delegates left for Berlin to seek an agreement with Germany as to communication between the two countries and for the return of the ships confiscated by Germany during the war. The agreements of 1918 with Germany had become invalid. The result of this expedition was a German-Finnish treaty signed in Berlin 22 April, regulating economic relations between the two countries, and pledging both to early negotiations for a broader economic convention.

In May a Swedish official who visited Finland to study the effects of prohibition there reported that Finnish prohibition was a "disillusionment." Intoxication he reported rife and he found that all kinds of spirits were served in restaurants without restraint. The police do not interfere unless patrons showed signs of tipsiness. On 13 May the entire cabinet resigned because of the failure of the Diet to ratify the Baltic alliance treaty, which the premier, Vennola, had negotiated at Warsaw just prior to the Genoa Conference. The main objection was to article seven of the treaty, which reads as follows: "The States in conference at Warsaw (Finland, Poland, Esthonia and Latvia), declare that, in case one of them is attacked by another State without proper cause, they shall observe a benevolent attitude toward the State attacked, and immediately consider what intervention shall be undertaken." When the foreign affairs committee of the Diet asked for further information concerning the treaty, the foreign minister disclosed an unpublished protocol affixed to the treaty text, specifying the procedure to be followed at Genoa by the contracting parties and other pledges couched in more or less vague terms. General dissatisfaction with the treaty was expressed as a result of this disclosure and a vote of lack of confidence in the government was passed in the Diet by a vote of 119 to 54 and it was decided to leave the treaty in abeyance until after the general elections in July.

The Finnish government joined Poland and Latvia in replying to the Russian proposals for disarmament to the effect that no reduction of armaments was feasible until Russia fulfilled its treaty obligations with the Baltic countries. The general parliamentary elections were held in July and resulted in victory for the Conservative elements. The new Eduskunta (Diet) has 45 Agrarians; 15 Progressives; 35 Finnish Coalitionists; 25 Swedish party; 53 Social-Democrats, and 27 Communists. The Finnish police discovered a Communist conspiracy at Viborg which involved large-scale espionage for Soviet Russia in Finland and the Karelian Peninsula. Plans were developed during the year for the hydro-electrification of the country, based on a usage of 800,000,000 kilowatts yearly. Sufficient funds were made available this year for the purchase of power sites and general surveys. Late in September the detective police discovered the activities of a band of

4,000 Finnish Reds in Sweden who planned to destroy rail and steamer communication with Finland preparatory to starting a revolution in Finland. The disclosure of the plan was sufficient to thwart it. At the opening of the new Parliament the temporary cabinet resigned but President Staalberg requested it to remain in office until a new ministry could be formed. On 20 October the bill regulating election of the president passed the Diet. This bill provides for the election of 300 presidential electors by general suffrage. These electors in turn elect the president. An Agrarian bill was enacted on 14 October providing for the breaking up of the large estates by limiting the size of private estates to about 300 hectares (450 acres). The excess areas of the estates are to be subdivided into small farms for sale at a reasonable price to persons without land. Foreign owned estates are to be cared for by the government for five years, when it will appropriate those whose owners do not appear and pay up all tax arrears plus the cost of the government in taking care of the property. The favorable trade balance shown throughout the year was reflected in the exchange. The Finnish mark stood at 2.80 cents at the beginning of November.

FIRE LOSSES. The fire loss record of the year 1922 stands as the worst in the history of the United States and Canada, with the exception of the year 1906, the year of the San Francisco fire and earthquake. The estimated value of the property in the United States and Canada destroyed by fire during 1922, as compiled by *The Journal of Commerce* from its daily records, aggregate \$410,889,350. This is an increase of some \$78,000,000, or 23 per cent, over the abnormally high figures of 1921.

There were no great general conflagrations in large cities during the year to excuse the immense fire waste, but, on the other hand, pronounced waves of heavy losses in centres or classes of business in which through the readjustment trade conditions were acute have produced evidence of bad moral hazard. This phase of the situation will be seen from a study of the monthly returns of the past three years given in the table below. It will be noted that wherever financial and trade conditions became particularly strained the monthly fire losses almost immediately became more excessive.

The monthly table of fire losses for the past three years is as follows, showing an unusually high average:

	1920	1921	1922
January....	\$37,012,750	\$35,319,950	\$38,663,000
February....	26,631,500	25,888,850	29,304,300
March.....	27,597,701	28,581,100	39,910,750
April.....	22,108,750	22,178,900	31,009,750
May.....	25,440,300	23,956,800	29,868,950
June.....	25,745,900	29,000,700	24,102,850
July.....	25,135,825	33,355,750	36,667,750
August.....	17,930,800	25,829,000	21,579,500
September..	25,630,050	26,502,400	41,515,000
October.....	28,331,100	27,955,350	40,065,400
November...	28,093,350	26,178,600	30,776,100
December...	41,197,600	28,907,550	47,426,000
Total year	\$330,855,625	\$332,654,950	\$410,889,350

This table gives the total fire losses of the three years of the readjustment period as \$1,074,-

399,925, or an annual average of \$358,133,308. That this enormous waste has been largely contributed to by carelessness and arson is beyond question. The loss experience of the fire insurance companies analyzed by the National Board of Fire Underwriters as to causes of fires shows that about 64 per cent of the fires are from preventable causes.

During the past 44 years the aggregate fire waste of the United States and Canada, as compiled from the daily records of *The Journal of Commerce*, reached the enormous annual average total of \$184,235,608. The record by years since 1879 is as follows:

1922.....	\$410,889,350	1900.....	\$163,362,250
1921.....	332,654,950	1899.....	136,773,200
1920.....	330,855,625	1898.....	119,650,500
1919.....	269,000,775	1897.....	110,319,650
1918.....	317,014,385	1896.....	115,655,500
1917.....	267,273,140	1895.....	129,835,700
1916.....	231,442,995	1894.....	128,246,400
1915.....	182,836,200	1893.....	156,445,875
1914.....	235,591,350	1892.....	151,516,000
1913.....	224,728,350	1891.....	143,764,000
1912.....	225,320,900	1890.....	108,893,700
1911.....	234,337,250	1889.....	123,046,800
1910.....	234,470,650	1888.....	110,885,600
1909.....	203,649,200	1887.....	120,283,000
1908.....	238,562,250	1886.....	104,924,700
1907.....	215,671,250	1885.....	102,818,700
1906.....	459,710,000	1884.....	110,108,600
1905.....	175,193,800	1883.....	110,149,000
1904.....	252,554,050	1882.....	84,505,000
1903.....	156,195,700	1881.....	81,280,000
1902.....	149,260,850	1880.....	74,643,400
1901.....	164,347,450	1879.....	77,703,700
Total, 44 years.....	\$8,106,366,745		

Fire losses in the United Kingdom for the first 11 months of 1922 showed a considerable reduction as compared with the same periods in the two previous years. The *Policy-Holder of Manchester*, published the following figures:

	1922	1921	1920
January.....	£1,285,000	£370,000	£303,000
February.....	477,000	350,000	694,000
March.....	505,000	425,000	506,500
April.....	347,000	643,000	479,500
May.....	792,000	936,000	1,120,000
June.....	454,500	780,000	806,000
July.....	415,700	820,000	619,000
August.....	281,700	1,070,000	561,000
September.....	345,000	750,000	940,000
October.....	305,000	620,000	1,155,000
November.....	510,900	475,000	500,000
Total for 11 months.....	£5,718,800	£7,239,000	£7,684,000
December.....		525,000	805,000
Total for 12 months.....	£5,718,800	£7,764,000	£8,489,000

FIRES, Forest. See FOREST SERVICE, UNITED STATES.

FISH, Larvical. See ROCKEFELLER FOUNDATION.

FISHERIES, United States Bureau of Fisheries of the United States.—The present annual production of the fisheries of the United States, including Alaska, on the basis of the latest available statistics, is about 2½ billion pounds, having a value to the fishermen of about \$80,000,000. The number of persons engaged in the industry, including those in the wholesale fishery trade, canneries, and other fishery establishments, is about 200,000, and the amount of capital invested is about \$154,000,000.

The total value of the canned fishery products of the United States in 1921 was \$46,634,706, and of fishery by-products \$8,351,827. The pack of canned salmon, on the basis of 48 pounds of fish to the case, amounted to 3,599,774 cases, valued at \$28,867,169. Of this quantity 2,596,826 cases, valued at \$19,632,744, were packed in Alaska, and 1,002,948 cases, valued at \$9,234,425, in the Pacific Coast States. The pack of sardines in Maine was 1,350,631 cases, valued at \$3,960,916, and in California 415,587 cases, valued at \$2,346,446. Other canned products included shad on the Pacific Coast, 894 cases, valued at \$2,597; alewives on the Atlantic Coast, 40,842 cases, valued at \$158,654; albacore and tuna, 418,821 cases, valued at \$3,073,681, and mackerel, 2,255 cases, valued at \$12,275 in California; shrimp, 667,557 cases, valued at \$3,804,781; crabs, 11,960 cases, valued at \$115,800; oysters, 455,550 cases, valued at \$2,179,271; clams, 226,130 cases, valued at \$1,166,507, and miscellaneous products valued at \$946,609.

The fishery by-products included fish scrap and meal, 107,273 tons, valued at \$3,557,142; fish oils, 7,446,281 gallons, valued at \$2,078,670; liquid glue, 347,048 gallons, valued at \$364,415; poultry, grit and lime, 259,238 tons, valued at \$2,261,754; and other by-products, 821,007

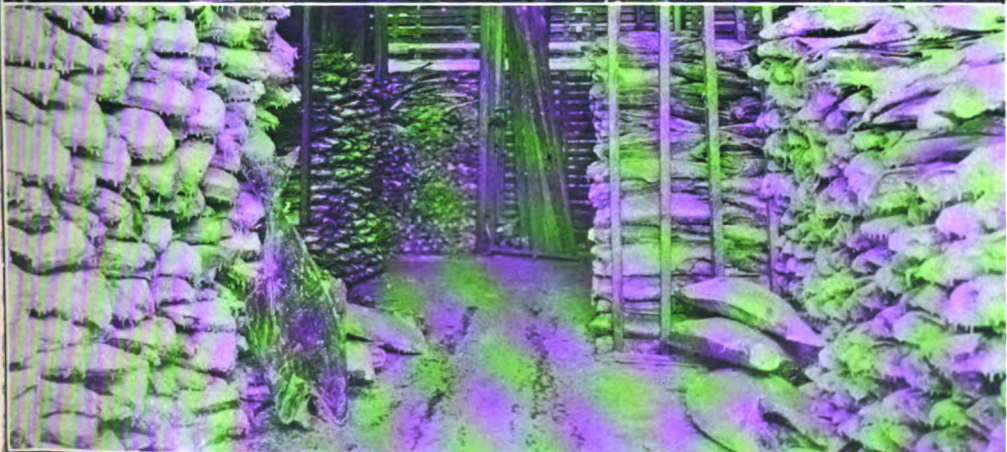
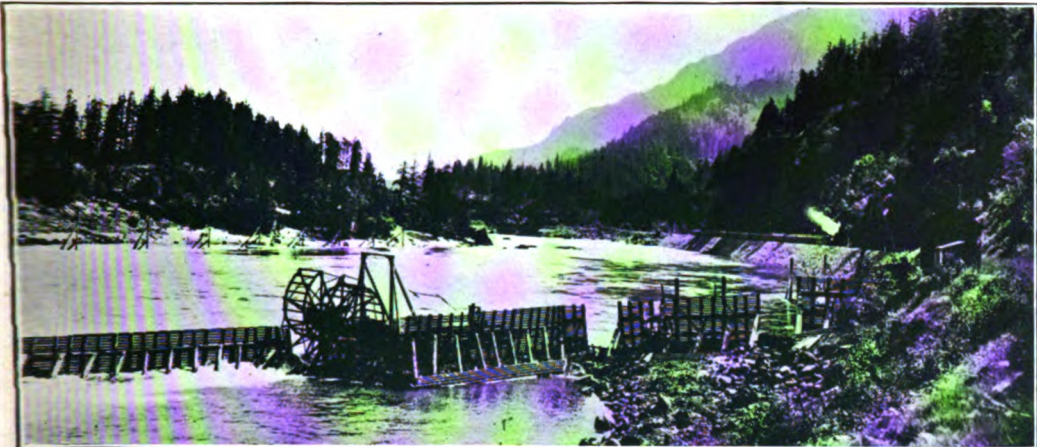
pounds, valued at \$89,846. The technological work done in 1922 included development of new preservatives for the preservation of fish nets, improved methods of freezing and transporting fish, and advances in the technique of canning sardines in California.

Biological Investigations.—These investigations during the year were directed principally to the acquisition of more definite knowledge concerning the life histories of certain of the more important food fishes, particularly such as are subjected to intensive fisheries and by reason of their distribution or habits are vulnerable to capture in numbers large in proportion to the total of the species. Noteworthy examples of such fishes are the Pacific Coast salmons, which run from the sea into fresh waters to spawn, and the various members of the whitefish family which are confined to interior waters and therefore, in many instances, subject to capture at all times throughout their lives. Important investigations of these fishes are being conducted to determine facts necessary for the establishment of effective measures for their conservation. The fishes of Chesapeake Bay, as a whole, have also been under investigation for essentially the same reasons. Grave difficulties with which the oyster industry has

SUMMARY, BY SPECIES, OF THE DISTRIBUTION OF FISH AND FISH EGGS, DURING THE FISCAL YEAR, ENDED 30 JUNE 1922.

SPECIES	Eggs	Fry	Fingerlings, yearlings and adults	Total
Catfish			52,137,880	52,137,880
Buffalofish	86,906,000	51,000,000	3,341,480	141,247,480
Carp		82,050,000	22,006,805	104,056,805
Shad		63,461,200		63,461,200
Glut herring		82,600,000		82,600,000
Whitefish	156,242,000	306,350,000		462,592,000
Cisco	220,690,000	47,400,000		268,090,000
Chinook salmon	1,400,000	1,311,550	57,769,870	60,481,420
Chum salmon		1,540,000	14,027,610	15,567,610
Humpback salmon		369,860	1,119,400	1,489,260
Silver salmon		600,000	11,074,940	11,674,940
Steelhead salmon	450,000	20,000	2,028,220	2,498,220
Sockeye salmon	150,000	32,600,000	59,522,365	92,272,365
Atlantic salmon		1,334,000	180	1,334,180
Landlocked salmon	115,000	187,230	95,780	398,010
Rainbow trout	2,377,840	410,700	4,439,685	7,228,225
Blackspotted trout	1,097,500	493,400	931,000	2,521,900
Loch leven trout			56,000	56,000
Lake trout	2,796,000	29,359,365	213,090	32,368,455
Brook trout	255,000	3,019,050	6,717,805	9,991,855
Grayling		250,000		250,000
Smelt		300,000		300,000
Pike and pickerel			679,795	679,795
Crappie			36,468,545	36,468,545
Largemouth black bass		281,700	1,652,710	1,934,410
Smallmouth black bass		568,250	76,990	645,240
Rock bass		800	52,095	52,895
Warmouth bass			2,515	2,515
Sunfish			52,697,985	52,697,985
Pike perch	79,650,000	55,897,500	34,390	135,581,890
Yellow perch	34,400,000	207,527,000	1,604,350	243,531,350
White bass			36,510	36,510
Striped bass		25,530,000		25,530,000
Freshwater drum			242,025	242,025
Cod	208,224,000	232,131,000		440,355,000
Haddock	75,960,000	290,820,000		366,780,000
Pollock		327,380,000		327,380,000
Winter flounder	193,178,000	1,867,378,000		2,060,556,000
Pole flounder	5,090,000			5,090,000
Mackerel		1,980,000		1,980,000
Scup		2,505,000		2,505,000
Sea bass		32,000		32,000
Miscellaneous river fishes			10,402,355	10,402,355
Total	1,068,981,340	3,716,687,605	339,432,375	5,125,101,320

FISHERIES



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1. Fish Wheel, Columbia River
2. A barge load of Alaska salmon
3. Thousands of pounds of Alaska salmon in Seattle cold storage plant

had to contend in recent years, particularly in Long Island Sound and on the south shore of Long Island have continued to receive attention, and in connection with this, and in its relation to other fisheries, such studies as have been possible have been made of the very serious and growing menace of water pollutions. Three biological laboratories have been open during the year, that at Fairport, Iowa, having been in full activity, that at Beaufort, N. C., being operated on a much reduced scale throughout the year, and that at Woods Hole, Mass., giving limited service during the summer.

Fish-Cultural Service.—Fish-cultural operations and the rescue of fishes from overflowed lands during the fiscal year 1922 resulted in a net output of 5,125,101,320 fish and fish eggs for distribution, as compared with 4,962,489,405 for the fiscal year 1921. This increased output, which includes an increase of approximately 33 per cent in the output of fingerling fish, was accomplished with a decrease of about 6 per cent in operating costs. The cost per million of the fish and eggs produced during 1922 was \$120.36, as compared with \$128.06 per million in 1921. Hatchery operations were conducted in 33 States and the Territory of Alaska, at 38 main stations and 35 auxiliaries. During the year the bureau's five distribution cars traveled a total of 77,128 miles, and the detached messengers delivering fish traveled 306,215 miles. Approximately 10,370 applicants were supplied with fish. In the preceding table is a summary of the distributions by species.

Alaska Fisheries Service.—The work of the bureau of fisheries in Alaska is carried on along two principal lines, first, for the protection of the salmon and other fisheries proper, and, second, in connection with the American fur-seal herd which annually resorts to the Pribilof Islands, Bering Sea. In the fisheries service a small force of permanent agents and wardens, and a considerably larger number of temporary employees patrol the waters during the active fishing seasons to enforce the laws and regulations for the protection of the salmon and other fisheries. Scientific and practical studies of the fisheries are made to determine the need of restrictions on operations. Commercial fishing in streams and within 500 yards off their mouths is prohibited and further limitations have been imposed in extensive fisheries reservations established by executive orders. Statistics collected by the Alaska service show that in 1921 there were 15,070 persons employed in the fisheries, the active investment of capital was \$39,001,096, and the value of products was \$24,086,867. Operations were expanded considerably in the season of 1922. The work of the fur-seal service consists chiefly in the killing of the surplus male seals on the Pribilof Islands and the preservation of the skins which are dressed and dyed and sold at public auction by agents of the Department of Commerce. The census of the seal herd as of 10 Aug. 1922, showed a total of 604,962 animals. In the calendar year 1921, 23,681 sealskins were taken, and through the summer sealing season ending 5 Aug. 1922, 30,260 skins had been taken. Additional skins will be secured in the fall. In the fiscal year 1922 two sales were held at Saint Louis at

which a total of 22,976 dressed and dyed fur-seal skins and 579 culls were disposed of, the gross proceeds being \$722,060. Under the terms of the fur-seal convention of 7 July 1911, Great Britain and Japan are each entitled to 15 per cent of the sealskins taken, but by mutual agreement payments have been made to those countries of 15 per cent of the net proceeds of sales. Herds of blue foxes are also maintained on the Pribilof Islands, from which in the winter of 1921–22 there were taken 733 skins, which sold for \$67,310.

HENRY F. MOORE,
*Deputy Commissioner, United States Bureau
of Fisheries.*

FISK UNIVERSITY, a non-sectarian co-educational institution for colored students, founded in 1865 and located at Nashville, Tenn. In 1922–23 it had a faculty of 45 members. The student registration at the end of the second quarter of the 1922–23 session totaled 618. The institution's property is valued at \$516,326 and its income for the year 1921–22 was \$151,120. Fayette Avery McKenzie, LL.D., is president.

FIUME, an independent state on the borderland between Italy and Yugoslavia near the head of the Adriatic. It has an area of eight square miles and a population of 49,806. The state was created by the treaty of Rapallo, signed 12 Nov. 1920 between Italy and Yugoslavia. In 1921 and in 1922 there was considerable unrest in the state resulting in the setting up of a provisional government under Lieutenant Cabruna.

FLAGLER, Clement Alexander Finley, American army officer: b. Georgia, 17 Aug. 1867; d. Baltimore, Md., 7 May 1922. After taking the Bachelor of Science degree at Griswold College, Iowa, in 1885, he entered the United States Military Academy and, upon his graduation therefrom in 1889, was commissioned additional second-lieutenant in the corps of engineers of the United States army. He was appointed second-lieutenant 1 April 1890; was graduated from the Engineering School of Application, 1892; and promoted to first-lieutenant 4 Oct. 1894. During 1894–95 he was instructor in civil and military engineering at the United States Military Academy. On 17 May 1898, following the outbreak of the war with Spain, he was commissioned a major in the engineering corps of the volunteer army and served on the staff of major-general J. H. Wilson at Chickamauga Park, Ga., Charleston, S. C., and Porto Rico. He was honorably discharged from the volunteers, 31 Dec. 1898, and resumed his rank of captain in the regular army to which he had been promoted 5 July 1898. He was engineer officer of the Department of the East, 1900–02, and in 1906 was appointed a member of the Chesapeake and Delaware canal commission. The same year, on 27 June, he was made a major in the regular army and on 27 Feb. 1913 was promoted to lieutenant-colonel. He served as a member of Gen. Frederick Funston's staff during the Vera Cruz expedition in 1914. In 1914–15 he was an instructor at the Army War College, and in 1916 was assigned to duty in Washington. He was promoted to colonel in 1917 and on 4 Jan. 1918

was nominated to the rank of brigadier-general by President Wilson. During the early part of America's participation in the World War, he was artillery commander of the 5th Division at St. Mihiel. Later he was promoted to major-general and given command of the artillery of the Third Army Corps in the Argonne-Meuse sector. After the armistice he commanded the 42d (Rainbow) Division in the army of the Rhine from 21 Nov. 1918 to 6 April 1919. Upon his return from overseas he was made commandant of the engineering school at Camp Humphreys, Va. Thereafter he was stationed for a time in Honolulu. In May 1921 he was transferred to Baltimore as commanding officer of the Eastern Division of the United States Engineer Corps, the position held by him at the time of his death.

FLAXSEED. The 1922 flaxseed crop of the United States was estimated by the Department of Agriculture at 12,238,000 bushels, as compared with the 1921 crop of 8,029,000 bushels, and the 1920 crop of 10,774,000 bushels. The acreage for the three years was 1,308,000 in 1922, 1,108,000 in 1921 and 1,757,000 in 1920. The total farm value of the crop based on 1 December prices was \$25,869,000 in 1922, \$11,648,000 in 1921 and \$19,039,000 in 1920. The average farm price per bushel on 1 December was 211.4 cents in 1922, 145.1 cents in 1921 and 176.7 cents in 1920. The production in bushels by States was as follows: Wisconsin, 52,000; Minnesota, 3,770,000; Iowa, 80,000; North Dakota, 5,462,000; South Dakota, 1,834,000; Nebraska, 24,000; Kansas, 120,000; Montana, 889,000 and Wyoming, 7,000.

FLINT, Charles Wesley, American clergyman and educator: b. in Stouffville, Ontario, Canada, 14 Nov. 1878. He was graduated from Victoria College, University of Toronto in 1900 and from the Drew Theological Seminary in 1906. Columbia gave him the degree of M.A. in 1908; Wesleyan University that of D.D. in 1912; and Coe College, Iowa, that of LL.D. in 1916. He entered the Methodist Episcopal ministry in 1900 and was pastor at Pocahontas, Iowa, in 1900-02; Marathon, Iowa, in 1902-04; Bayville, Long Island, 1904-06; Saint James's Church, Brooklyn, 1906-08; Middletown, Conn., 1908-13; and New York Avenue Church, Brooklyn, 1913-15. In 1915 he became president of Cornell College, Mt. Vernon, Iowa, where he remained until 1922 when he was made Chancellor of Syracuse University. He made his first appearance before a Syracuse assembly when he spoke to 4,000 students in an open air meeting in the Archbold stadium on 20 September. He denounced drunkenness as a "traitorous taint" and hazing as belonging to "the stone age of college life."

FLOOD CONTROL, Appropriations for. See RIVERS AND HARBORS, APPROPRIATION FOR IMPROVEMENT OF.

FLORA MACDONALD COLLEGE, a Presbyterian educational institution for women, founded in 1896 and located at Red Springs, N. C. In 1922-23 it had a faculty of 35 members, 304 students, and property valued at \$460,000. Income figures not given. Charles Graves Vardell, A.B., D.D., is president.

FLORIDA, a South Atlantic State of the United States, bounded on the north by Georgia and Alabama, on the east by the Atlantic Ocean, south by the Straits of Florida and west by the Gulf of Mexico. The State has an area of 58,666 square miles, which makes it the 21st State in order of size; and in 1920 had a population of 968,470, which made it 32d in order of population. Of the entire population in 1920, whites numbered 638,983, negroes, 329,487, Asiatics, 312 and Indians, 518. In the same year the foreign-born numbered 43,008, including 8,700 from the West Indies, 4,451 English, 4,745 Italians, 4,121 Canadians, 4,091 Spaniards and 3,534 Germans. The seat of the State government is at Tallahassee. The largest cities in the State, with their population, in 1920 were: Jacksonville, 91,558; Tampa, 51,608; Pensacola, 31,035; Miami, 29,549; Key West, 18,749, and Tallahassee, 6,000.

Religion.—The chief religious denominations are Baptists, 131,107; Methodists, 114,821; Roman Catholics, 24,650; Protestant Episcopalians, 10,399; Presbyterians, 10,170; and Congregationalists, 2,878.

Education.—Attendance at the primary schools of the State is not compulsory. Separate schools are provided for white and colored children. There are in the State 2,584 public primary schools with 6,296 teachers and 212,465 pupils; 125 high schools with 525 teachers and 12,695 pupils. For purposes of higher education, the State maintains a university at Gainesville and a State College for Women at Tallahassee. In addition to these State institutions, there is Rollins College at Winter Park; also, the John B. Stetson University at DeLand. The expenditure on primary education in 1920 amounted to \$7,003,188.

Agriculture.—Florida is one of the most important fruit growing States of the Union, the citrus fruits being especially important. The production of citrus fruits in 1922 was estimated at 15,000,000 boxes by the United States Department of Agriculture. Of this total about 8,400,000 boxes were oranges and tangerines, the remainder consisting of grape fruit. The chief crops, with their acreage, yield and value, for the year 1922 were: corn, 750,000 acres, 10,500,000 bushels, \$7,350,000; oats, 37,000 acres, 481,000 bushels, \$327,000; oranges and tangerines, 8,400,000 boxes, \$19,320,000; tame hay, 126,000 acres, 139,000 tons, \$2,572,000; sorghum syrup, 1,000 acres, 130,000 gallons, \$68,000; rice, 3,000 acres, 75,000 bushels, \$98,000; potatoes, 26,000 acres, 2,600,000 bushels, \$4,550,000; sweet potatoes, 32,000 acres, 2,720,000 bushels, \$2,557,000; cotton, 124,000 acres, 25,000 bales, \$2,875,000; tobacco, 3,000 acres, 3,300,000 pounds, \$1,551,000; peanuts, 72,000 acres, 44,928,000 pounds, \$2,246,000; peaches, 130,000 bushels, and pears, 50,000 bushels. According to the last agricultural census there were in Florida 154,005 farms, with a total acreage of 6,046,691 acres, of which 2,297,271 acres were improved. The same census gave the value of all farm property in the State at \$330,301,317. Florida is about the only State in the United States in which the pineapple crop is considerable. Outside of the fruit crop, tobacco, Indian corn,

oats, peas and peanuts are the chief sources of agricultural wealth. On 1 Jan. 1923 there were in the State 38,000 horses, valued at \$3,-990,000; 43,000 mules, valued at \$5,934,000; 97,-000 milk cows, valued at \$5,432,000; 774,000 other cattle, valued at \$12,384,000; 63,000 sheep, valued at \$220,000, and 703,000 hogs, valued at \$5,272,000. About three-fourths of the State is covered by valuable timber. The State exports large quantities of oak and pitch pine. Tar, turpentine and rosin are important by-products of the timber industry.

Mining.—The State has extensive natural deposits of phosphate rock, of which great quantities are yearly ground into fertilizer and exported. The annual value of the phosphate rock output is about \$6,000,000. Other mineral products are Fullers' earth, lime and mineral waters.

Fisheries.—The fisheries of the State are extensive, and while not fully developed, are more important than those of the neighboring States. The chief products of this industry are shad, snappers, mullet, tuna, tarpon, turtles and sponges. Florida has a practical monopoly of the last-named industry.

Manufactures.—At the last census there were in the State 5,493 manufacturing establishments with an aggregate capital of \$65,061,746, employing 69,955 hands, who received in wages \$40,-075,037. The chief manufactures are those of tobacco, centering in Key West and Tampa, both cities competing closely with Cuba in the manufacture of fine cigars.

Communications.—There are 5,212 miles of railway in the State and 218 miles of electric railway. Water transportation is facilitated by the position of the State, and a large trade is carried on through the port of Pensacola. A feature of the transportation system of the State is the line of railway which crosses the Keys and terminates at Key West. During 1922, a regular air service was maintained between Florida and Cuba.

Finances.—At the beginning of the fiscal year, 1921-22, the State Treasury had a balance on hand of \$1,695,473.56. Receipts during the fiscal year, 1921-22, amounted to \$12,480,857.96. Disbursements during the same period amounted to \$11,913,041.88, leaving a balance on hand at the beginning of the fiscal year, 1922-23, of \$2,263,289.64. In 1922, the public debt of Florida consisted of refunding bonds to the amount of \$601,567. The assessed value of real property was \$288,040,507; personal property, \$79,571,-126; railroad, \$52,017,530; telegraph, \$1,094,752; Pullman cars, \$724,599, making a grand total of \$421,448,514, as of 1 Jan. 1922.

Government.—The State executive is a governor, elected for four years. The legislative power is vested in a State legislature of two chambers—a senate of 32 members and a house of representatives of 75 members. Senators are elected for four years and members of the lower house for two years. Sessions are held biennially beginning in April of odd years and are limited to sixty days. The governor in 1922-23 was Cary A. Hardee; secretary of state, H. C. Crawford; president of the senate, W. A. MacWilliams; attorney general, Rivers Buford; comptroller, Ernest Amos; treasurer, J. C. Lun-

ing; auditor, W. M. Smith; superintendent of education, W. S. Cawthon.

Judiciary: Chief Justice, R. Fenwick Taylor; Associate Justices, James R. Whitfield, William H. Ellis, Jefferson B. Browne, Thomas F. West.

FLORIDA, University of, a State educational institution for men, founded in 1905 and located at Gainesville, Fla. In 1922-23 it had a faculty of 75 members, 1,252 students, property valued at \$1,500,000 and an income of \$219,-054. Albert Alexander Murphree, LL.D., is president.

FLY WEEVIL. See ENTOMOLOGY, UNITED STATES BUREAU OF.

FOOD AND DRUG ACT, Enforcement of. See CHEMISTRY, FEDERAL BUREAU OF.

FOOD POISONING. See PUBLIC HEALTH SERVICE, UNITED STATES.

FOOD PRODUCTS, Exports of. Statistics compiled by the Department of Commerce show that in both quantity and value there was

	1921	1922
Total meats, pounds.....	799,387,242	
Total meats, value.....	\$150,878,243	\$134,919,343
Total dairy products.....	44,145,749	24,905,495
Animal oils and fats.....	146,017,308	118,432,275
Grains and prep's of.....	758,397,520	515,913,077
Canned vegetables.....	3,428,193	4,368,487
Canned fruits.....	14,381,421	22,324,453
Beef, fresh, pounds.....	10,341,007	3,926,937
Beef, fresh, value.....	\$1,798,398	\$569,419
Beef, pickled, etc., pounds.....	24,590,582	26,208,225
Beef, pickled, etc., value.....	\$2,583,716	\$2,333,094
Pork, fresh, pounds.....	56,083,263	26,974,147
Pork, fresh, value.....	\$9,336,527	\$4,308,006
Hams and shoulders, pounds.....	232,323,797	289,613,175
Hams and shoulders, value.....	\$47,750,420	\$57,070,244
Bacon, pounds.....	415,356,152	341,838,745
Bacon, value.....	\$68,180,044	\$51,989,095
Pork, pickled, pounds.....	32,842,607	38,628,919
Pork, pickled, value.....	\$4,215,798	\$4,468,175
Beef, canned, pounds.....	6,077,248	2,550,770
Beef, canned, value.....	\$1,276,147	\$774,805
Sausage, canned, pounds.....	2,556,091	2,091,136
Sausage, canned, value.....	\$874,502	\$620,720
Oleo oil, pounds.....	127,977,713	109,386,571
Oleo oil, value.....	\$14,617,971	\$11,464,837
Lard, pounds.....	868,941,569	766,950,103
Lard, value.....	\$112,532,841	\$91,484,669
Neutral lard, pounds.....	23,950,789	20,497,006
Neutral lard, value.....	\$3,438,059	\$2,586,703
*Lard compounds, animal fats, pounds.....	48,206,583	16,286,169
*Lard compounds, animal fats, value.....	\$5,548,931	\$1,952,187
*Margarine, animal fats, pounds.....	3,329,049	1,843,407
*Margarine, animal fats, value.....	\$672,327	\$298,487
Milk, condensed, pounds.....	299,168,168	193,686,904
Milk, condensed, value.....	\$37,680,330	\$19,464,431
Canned salmon, pounds.....	50,498,411	63,797,279
Canned salmon, value.....	\$7,508,253	\$7,962,375
Barley, bushels.....	25,834,000	18,449,621
Barley, value.....	\$20,687,056	\$13,491,093
Corn, bushels.....	128,974,505	163,609,213
Corn, value.....	\$92,766,988	\$115,096,599
Oats, bushels.....	3,224,145	30,011,133
Oats, value.....	\$1,609,714	\$15,060,199
Rice, pounds.....	600,058,978	358,826,537
Rice, value.....	\$20,727,313	\$14,378,780
Rye, bushels.....	29,811,721	47,260,275
Rye, value.....	\$44,214,420	\$45,785,911
Wheat, bushels.....	280,057,601	164,691,565
Wheat, value.....	\$433,053,336	\$206,338,408
Wheat flour, barrels.....	16,800,805	15,024,628
Wheat flour, value.....	\$117,698,225	\$85,482,851
Cottonseed oil, pounds.....	252,548,666	75,302,821
Cottonseed oil, value.....	\$24,361,974	\$7,287,142
Lard compounds, vegetable fats, pounds.....		25,478,494
Lard compounds, vegetable fats, value.....		\$2,968,705

* Includes vegetable fats prior to January 1, 1922.

a big falling off in the food products exported from the United States in 1922 as compared with similar exports in 1921. Only in the shipments of canned fruits and vegetables were increases registered. The total value of all meats shipped in 1922 was \$134,919,343 as compared with \$150,878,243 in the preceding year. Grain shipments dropped in value from \$758,397,520 in 1921 to \$515,913,077 in 1922. The preceding table compiled by the Department of Commerce shows the quantity and value of the principal food products exported in 1921 and 1922.

Exports of sugar, not shown in the above list, reached 1,836,722,436 pounds or about twice the amount exported in 1921 and almost 13 times the amount exported in any pre-war year. Butter exports totaled 10,937,519 pounds in 1922 as compared with 8,014,731 pounds in 1921. Cheese exports, which like butter are not shown separately in the above list, totaled but 5,006,574 pounds in 1922 as compared with 11,771,971 pounds in 1921. Dried fruit exports, likewise not shown in the above list, were as follows: apples, 1922, 17,391,339 pounds; 1921, 19,962,306 pounds; apricots, 1922, 9,858,450 pounds; 1921, 21,575,149 pounds; raisins, 1922, 93,891,071 pounds; 1921, 32,968,664; peaches, 1922, 5,764,923 pounds; 1921, 6,893,124 pounds; prunes, 1922, 94,216,405 pounds; 1921, 117,933,740 pounds. For Food Production see AGRICULTURE IN THE UNITED STATES; FARM PRODUCTS; HORTICULTURE, etc.

FOOD STANDARDS, Federal. On Jan. 1923, Secretary Wallace of the United States Department of Agriculture, announced the adoption, for the guidance of Federal officials in the enforcement of the Federal Food and Drug Act, of standards and definitions of butter, condensed milk, breads (wheat, rye, raisin, brown, etc.), ginger ale, cacao products (cocoa, chocolate, etc.), cayenne pepper and oil of cassia. The standards became effective at once and the announcement of their adoption stated that they had been approved by the Association of American Dairy, Food and Drug Officials and the Association of Official Agricultural Chemists. It was further stated that they will be used generally by State officials in the enforcement of State food laws.

The texts of the standards and definitions, which were adopted upon the recommendation of the Joint Committee on Definitions and Standards, follow:

Butter.—Butter is the clean, sound product made by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also includes a small portion of the other natural milk constituents, with or without salt, and contains, all tolerances provided for, less than 16 per cent of water, and not less than 80 per cent of milk fat. By acts of Congress, approved August 2, 1886, and May 9, 1902, butter may also contain added coloring matter.

Renovated butter, process butter, is the clean, sound product made in semblance of butter from melted, clarified or refined butter-fat, without the addition or use of any substance other than water, milk, cream, or salt, and contains, all tolerances provided for, less than 16 per cent of water, and not less than 80 per cent of milk fat.

Condensed Milk.—Condensed milk, evaporated milk, concentrated milk is the product resulting from the evaporation of a considerable portion of the water from milk, or from milk with adjustment, if necessary, of the ratio of fat to non-fat solids by the addition or by the abstraction of cream. It contains, all tolerances being allowed for, not less than seven and eight-tenths per cent of milk fat, nor less than twenty-five and five-tenths per cent of total milk solids; provided, however, that the sum of the percentages of milk fat and total milk solids be not less than thirty-three and seven-tenths.

Bread.—Bread is the sound product made by baking a dough consisting of a leavened or unleavened mixture of ground grain and (or) other clean, sound, edible farinaceous substance, with potable water, and with or without the addition of other edible substances.*

In the United States the name "bread," unqualified, is understood to mean wheat bread, white bread.

Wheat bread dough, white bread dough, is the dough consisting of a leavened and kneaded mixture of flour, potable water, edible fat or oil, sugar and (or) other fermentable carbohydrate substance, salt and yeast, with or without the addition of milk or a milk product of diastatic and (or) proteolytic ferments, and of such limited amounts of unobjectionable salts as serve solely as yeast nutrients,* and with or without the replacement of not more than 3 per cent (3%) of the flour ingredient by some other edible farinaceous substance.

Wheat bread, white bread, is the bread obtained by baking wheat bread dough in the form of a loaf or of rolls or other units smaller than a loaf. It contains, one hour or more after baking, not more than thirty-eight per cent (38%) of moisture, as determined upon the entire loaf or other unit.

Milk bread is the bread obtained by baking a wheat bread dough in which not less than one-third (1) of the water ingredient has been replaced by milk or the constituents of milk solids in the proportions normal for whole milk. It conforms to the moisture limitations for wheat bread.

Rye bread is the bread obtained by baking a dough which differs from wheat bread dough in that not less than one-third (1) of the flour ingredient has been replaced by rye flour. It conforms to the moisture limitation for wheat bread.

Raisin bread is the bread obtained by baking wheat bread dough, to which have been added sound raisins in quantity equivalent to at least three (3) ounces for each pound of the baked product and which may contain proportions of sweetening and shortening ingredients greater than those commonly used in wheat bread dough.

Brown bread, Boston brown bread, is a bread made from rye and corn meals, with or without flour, whole-wheat flour and (or) rye flour, with molasses and in which chemical leavening agents, with or without sour milk, are commonly used instead of yeast.

In some localities the name brown bread is used to designate a bread obtained by baking a dough which differs from wheat bread dough in that a proportion of the flour ingredient has been replaced by whole wheat flour.

Ginger Ale.—Ginger ale flavor, ginger ale concentrate, is the flavoring product in which ginger is the essential constituent, with or without aromatic and pungent ingredients, citrus oils and fruit juices.

Ginger ale is the carbonated beverage prepared from ginger ale flavor, sugar (sucrose) syrup, harmless organic acid, potable water and caramel color.

Cacao Products.—Cacao beans, cocoa beans, are the seeds of trees belonging to the genus Theobroma, especially those of Theobroma, cacao L., and closely related species.

Cacao nibs, cocoa nibs, "cracked cocoa," are roasted or dried cacao beans, broken and freed from germ and from shell or husk.

Chocolate, plain chocolate, bitter chocolate, chocolate liquor, chocolate paste, bitter chocolate coating, is the solid or plastic mass obtained by grinding cacao nibs and contains not less than 50 per cent of cacao fat and, on the moisture- and fat-free basis, not more than 8 per cent of total ash, not more than four-tenths per cent of ash insoluble in hydrochloric acid and not more than 7 per cent of crude fiber.

Sweet chocolate, sweet chocolate coating, is chocolate mixed with sugar (sucrose), with or without the addition of cacao, butter, spices, or other flavoring materials, and contains, on the moisture, sugar- and fat-free basis, no greater percentage of total ash insoluble in hydrochloric acid, or crude fiber, respectively, than is found in moisture- and fat-free chocolate.

Milk chocolate, sweet milk chocolate, is the product obtained by grinding chocolate with sugar, with the solids of whole milk, or the constituents of milk solids in proportions normal for whole milk and with or without cacao butter and (or) flavoring material. It contains not less than 12 per cent of milk solids.

Cocoa, powdered cocoa, is a chocolate deprived of a portion of its fat and pulverized and contains, on the moisture and fat-free basis, no greater percentage of total ash, ash insoluble in hydrochloric acid, or crude fiber, respectively, than is found in moisture- and fat-free chocolate.

"Breakfast cocoa" is cocoa which contains not less than 22 per cent of cacao fat.

Sweet cocoa, sweetened cocoa, is cocoa mixed with sugar (sucrose), and contains no more than 65 per cent of sugar in the finished product, and, on the moisture-sugar- and fat-free bases, no greater percentage of total ash, ash insol-

*The propriety of the use of minute amounts of oxidizing agents as enzyme activators is reserved for future consideration and without prejudice.

† Definitions and standards for alkalinized products will form a separate schedule.

uble in hydrochloric acid, or crude fiber, respectively, than is found in moisture- and fat-free chocolate.

Sweet milk cocoa is the product obtained by grinding cocoa with sugar, with the solids of whole milk, or the constituents of milk solids in proportions normal for whole milk, and with or without flavoring material. It contains not less than 12 per cent of milk solids.

Cacaco butter, cocoa butter, is the edible fat obtained from sound cacao beans (seeds of *Theobroma cacao* L., or other closely related species), either before or after roasting.

Cayenne Pepper.—Cayenne pepper, cayenne, is the dried, ripe fruit of *Capsicum futescens* L., *Capsicum baccatum* L., or some other small-fruited species of *Capsicum*. It contains not less than 15 per cent of non-volatile ether extract, not more than 15-10 per cent of starch, not more than 28 per cent of crude fiber, not more than 8 per cent of total ash, nor more than 125-100 per cent of ash insoluble in hydrochloric acid.

Oil of Cassia.—Oil of Cassia is the lead-free volatile oil obtained from the leaves or bark of *cinnamomum cassia* B., and contains not less than 80 per cent by volume of cinnamic aldehyde.

FOORD, John, Scottish-American journalist: b. Perthshire, Scotland, 12 Oct. 1844; d. Washington, D. C., 17 April 1922. He was educated at Dundee and went to London, where he became a journalist. In 1869, he became a reporter for the *New York Times* and attracted attention by his handling of the exposures of the "Tweed Ring." He then began to write editorials and displayed a wide grasp of affairs and a great insight into commercial and financial topics. In 1876, Mr. Foord became editor-in-chief of the *New York Times* (then a Republican paper) and held this position until 1883. Next he became editor and part owner of *The Brooklyn Union*; then he edited *Harper's Weekly*; and for the last 20 years was a member of the editorial staff of *The Journal of Commerce*, devoting his pen to economics and international topics. In the summer and autumn of 1920, while in the Orient, he contributed to the *New York Times* a series of signed articles on his observations. The growth of his interest in Asiatic affairs led him to the formation in 1898 of the American Asiatic Association, which was a protest against the encroachment of German and Russian aggression upon Asia. Mr. Foord was also the founder and editor of *The Journal of the American Asiatic Association*, published from 1898 to 1917. In the last year the late Willard Straight, who was president of the American Asiatic Association, agreed to finance the development of this *Journal* into a broad general magazine and he and Mr. Foord then organized and began the publication of *Asia*, with Mr. Foord as editor. In 1914 he joined James A. Farrell, president of the United States Steel Corporation, the late Willard Straight and Robert H. Patchin in organizing the National Foreign Trade Council, and with Willard Straight founded India House. His speech responding to the toast "Why India House?" at the first dinner of the club was published throughout the world. For many years Mr. Foord was president of the Burns Society. He wrote a life of Andrew H. Green, one of the factors in New York City government in cleaning up the "Tweed Ring"; and the life of Simon Stern, lawyer and president of the bar association. His death was occasioned by injuries received when he was struck by an automobile in Washington.

FOOT AND MOUTH DISEASE. See VETERINARY MEDICINE AND SURGERY.

FOOTBALL. See SPORTS.

FORBES, Jesse Franklin, American clergyman: b. Hartford, Conn., 19 Dec. 1847; d. Watermill, Long Island, 9 July 1922. He was graduated from Amherst College in 1874 and from Union Theological Seminary in 1877. He was ordained to the Congregational ministry in 1878 and went to officiate at the First Congregational Church, Warren, Mass., where he remained seven years. Then he became pastor of the Adams Memorial Presbyterian Church of New York, 30th Street, near 3d Avenue, and remained there for 25 years. When John S. Kennedy left several million dollars for Presbyterian Church Extension in New York, Dr. Forbes gave up his active pastorate to devote all his time to the church extension committee. His office was in the Presbyterian Building, 156 Fifth Avenue, and as secretary of this committee \$1,500,000 passed through his hands for purchasing new property, for building, paying off mortgages, etc. He bought or built 27 churches, and parish houses in the boroughs of Manhattan, The Bronx and Richmond. Every Sunday he preached in a different pulpit and it was said that he knew more about local Presbyterianism than any other living person. For three successive terms he was Moderator of the Presbytery and for many years he had been a member of the Moderator's Council. New York University gave him the degree of Ph.D. in 1894 and Bellevue College, Nebraska, that of D.D. in 1906. Dr. Forbes wrote for the *New York Observer* and other religious papers and magazines.

FORDHAM UNIVERSITY, a co-educational institution, founded in 1841 and located at Fordham, New York City. Although controlled by the Roman Catholic Church, it is non-sectarian. In 1922-23 it had a faculty of 140 members, 3,997 students, property valued at \$3,600,000, and a gross income of \$562,000. Rev. Edward P. Tivnan, S.J., Ph.D., is president.

FOREIGN POLICY ASSOCIATION. See PEACE AND ARBITRATION, INTERNATIONAL.

FOREIGN RELATIONS, Inc., Council on. The Council on Foreign Relations of New York, a national organization which aims to provide a continuous conference on the international aspects of America's political, economic and financial problems. Its membership, made up of men of many professions, is limited in number, as a large body would be unwieldy and freedom in discussion would be lost. At the council's round-table meetings and dinners foreign guests are entertained, and the attitude which the United States might properly assume toward the problems they raise is discussed. The council is not a trade organization nor has it any connection with any political party. It is simply a group of men concerned in spreading a knowledge of international relations and, in particular, in developing a reasoned American foreign policy.

In addition to holding regular meetings, the Council on Foreign Relations publishes occasional bulletins and in the fall of 1922 founded a quarterly review, *Foreign Affairs*, under the editorship of Dr. Archibald Cary Coolidge of Harvard University, with Hamilton Fish Arm-

strong as managing editor. The following constitute the editorial advisory board: Isaiah Bowman, George H. Blakeslee, Stephen P. Duggan, John W. Davis, Harry A. Garfield, Edwin F. Gay, Alexander Legge, Leo S. Rowe, George W. Wickersham.

Foreign Affairs, a non-partisan medium for the discussion of international problems, has been warmly welcomed both here and abroad. The council feels that it is performing an important public service in making possible the publication of an authoritative review of this nature. During 1922, the Council on Foreign Relations also held a number of meetings and organized study and discussion groups among its members. The chief public meeting of the year organized by the Council on Foreign Relations was that held at the Metropolitan Opera House, when M. Georges Clemenceau, former Premier of France, made his only public address in New York on 21 Nov. 1922. The officers of the Council on Foreign Relations are as follows: Elihu Root, honorary chairman; John W. Davis, president; Paul D. Cravath, vice-president; Edwin F. Gay, secretary and treasurer. Directors: Isaiah Bowman, Archibald C. Coolidge, Norman H. Davis, Stephen P. Duggan, John H. Finley, David F. Houston, Otto H. Kahn, Frank L. Polk, Whitney H. Shepardson, William R. Shepherd, Paul M. Warburg, George W. Wickersham.

HAMILTON FISH ARMSTRONG,
Manager, Council on Foreign Relations.

FOREST FIRES. See **FOREST SERVICE, UNITED STATES.**

FOREST INSECTS. See **ENTOMOLOGY, UNITED STATES BUREAU OF.**

FOREST SERVICE, United States. In the specific work of the Forest Service bearing upon the national situation, the most striking advances during the past year were the threefold expansion of forest protection in co-operation with the States and the enactment of a general forest exchange law. This legislation will make possible a substantial consolidation of the existing national forests through the acquisition of privately owned cutover lands within their exterior boundaries. The Forest Service is continuing the nation-wide study, in co-operation with State foresters, timberland owners, and other agencies, of the barriers to reforestation which exist in each important forest region, and of the methods of cutting and fire protection which are necessary to keep the various types of forest land productive. From this study it will be possible to formulate in reasonably definite terms the measures that may be equitably enforced by public regulation in each region to keep up the productiveness and usefulness of its forest lands. During January, 1922, extended hearings were held by the committee on agriculture of the House of Representatives on the need for additional Federal legislation dealing with the national forestry situation. It is hoped that a constructive measure will be brought before Congress as the result of these hearings. The immediate needs are: (1) The extension of Federal co-operation with States; (2) An enlarged scale of national forest purchases; (3) The extension of

forest protection and management to all lands now under national ownership or control whose greatest utility lies in the growing of timber or protection of watersheds; (4) Co-operation with States in growing and distributing forest planting material; (5) Provision for enlarged research in order to keep pace with the demand of timber growers and wood users for needed technical information.

Alaska.—Good progress was made in collecting the information essential to the practical development of Tongass National Forest, which occupies the heavily timbered panhandle of Alaska. The merchantable timber on this forest includes at least 100 million cords of western hemlock and Sitka spruce. Fully 90 per cent of this timber is admirably adapted for use in the manufacture of wood pulp and paper. It is estimated that this forest alone can furnish perpetually an annual yield of print paper equal to one-third of our total national consumption. As a step toward the establishment of the industry, the Tongass National Forest was tentatively divided into 14 zones, each embracing sufficient timber to furnish a large paper mill with a permanent supply of raw material. Each zone is laid out so as to include sufficient water-power to meet the requirements of manufacture. The Federal Power Commission is co-operating with the Forest Service in securing water-power data. Roads have been, and more are being, constructed in the Alaska forests in co-operation with the Bureau of Public Roads. The result has been a marked increase in home building and a decided improvement in business and living conditions there.

National Forest Properties.—Specific acts of Congress added to the forests 55,753 acres, and a presidential proclamation 16,719 acres. In Michigan 11,499 acres passed from State to Federal ownership by exchange and were added to the Michigan National Forest. At the same time 8,320 acres were eliminated from this forest and transferred to the State. Exchange agreements with other States resulted in transfers of titles and eliminations totaling 43,675 acres. At the close of the fiscal year, the net area of national forest land was 156,837,282 acres. The net increase for the year was 171,327 acres. Purchase agreements were approved by the National Forest Reservation Commission covering 242,169 acres at a total cost of \$800,584.96, or \$3.30 per acre. Actual acquisition of these lands will not take place until subsequent years. The acquisitions completed last year totaled 137,659.24 acres. The cost was \$839,406.91, an average of \$6.49 per acre. The Commission, which controls all purchases of land under the Weeks law, has recommended that \$2,000,000 be appropriated for the purchase of forest lands during the fiscal year 1924. This would be a return to the scale of expenditure established by the Weeks law itself during the first five years following its passage. This amount is the least that can be expended with complete efficiency in view of the size of some of the holdings offered and the field organization that effective work necessitates. It is essential that purchases by the government keep pace more nearly with the progress of deforestation.

One of the most significant events in the history of the national forest movement was the signing by the President on 20 March 1922 of a bill authorizing exchange of national forest lands or stumpage for privately owned lands within a national forest in the same State. This will permit private owners who cannot handle their holdings advantageously to offer them in exchange for lands or stumpage of equal value, and which are better located for their purposes. No other forest legislation passed in recent years will have so far-reaching an influence for the betterment and extension of the public forest properties. This act is quite different from the Lieu Selection Act of 4 June 1897, which conferred on owners of land within national forest boundaries the right to surrender title to the government and take other lands of equal area, quite irrespective of wide discrepancies in value, which almost invariably were grossly unfavorable to the public interest. Acceptance of exchange by the government was mandatory and not discretionary under the lieu act. There was, therefore, no way to prevent lieu selections that were against public interest. Public resources were spoiled to such an extent that this act was repealed 1 Feb. 1905, thus correcting a crying scandal.

Co-operation with States.—Protection from fire of lands in State and private ownership on watersheds of navigable streams was made more effective by an increase in the Federal appropriation for this purpose from \$125,000 to \$400,000. This has led to the extension of protection to 4,800,000 acres in New York State and 5,000,000 acres in Maine, and to 8,000,000 to 12,000,000 acres in Louisiana. It is noteworthy that though the 1922 increase in Federal funds was less than one-half of the increase in State expenditures, the area to which fire protection was extended increased 26,000,000 acres during the year. In addition to public expenditures, amounts now expended by private owners total approximately \$1,000,000 a year. It is doubtful if any form of Federal expenditure is more valuable in assuring a future supply of forest products for the nation than this co-operation. A material increase in the Federal appropriation for this purpose is urgently needed.

Forest Management.—The national forest resources are being brought under a system of management that has as its object the growing of timber as fast as it is cut. Studies are being conducted continually with a view to the perfecting of such systematic management as will contribute most to the needs of the many industries that depend on supplies of timber. Timber sold during the calendar year ending 31 Dec. 1921 totaled 1,276,991,000 board feet, valued at \$3,762,793. The number of timber sales was 13,690. The number of acres planted and sowed 8,901.

Grazing.—During the year, 37,241 permits were issued for grazing of stock on the national forests. The following numbers of head of stock were grazed. Sheep 6,936,377, cattle 1,999,680, horses 78,115, goats 43,574, swine 2,453, a grand total of 9,060,199 head.

Fish and Game Protection.—Fish and game management plans are being developed on all forests as fast as funds and personnel will

permit. Their objectives are the preservation of adequate spawning and breeding stock; control of environmental factors, and promotion of public sentiment, laws, and organizations necessary to the proper protection and development of wild life. In this work the views of game enthusiast, sportsman, stockman, and lumberman must be recognized and harmonized.

Visitors to National Forests.—Motors and good roads have resulted in marked increases of visitors to the national forests. Between 5,000,000 and 7,000,000 people visit them each year. No restrictions are placed on these visits excepting care with fire and cleanliness about camps. Public welfare dictates an aggressive policy of ascertaining, developing, and offering the recreational opportunities in the national forests.

Roads and Trails.—During the fiscal year 1922, 1,104 miles of road and 2,959 miles of trail were constructed and improved and 3,007 miles of road and 4,294 miles of trail were maintained. These mileages include the more costly and important work of the Bureau of Public Roads and also the more simple work of the Forest Service. A study is being made of the road needs of the national forests under the two classes of roads specified in the Federal highway act.

Research.—Forest research has for its broad aim the obtaining of the knowledge necessary to the best use of our forest land and of what it can be made to grow. This involves a number of subsidiary studies. A study of forest fires is being conducted to determine where most fires occur, how they are caused and the weak spots in prevention organizations. Also the relation between weather conditions and fires is being studied. Low humidity means danger. Abundant moisture in the air acts like a wet blanket. Tests made on fires in the Pacific northwest have predicted with surprising accuracy the rising or falling violence of the fires and made possible increased efficiency of attack. The Forest Products' Laboratory studies the uses to which wood may be put, its strength and its preservation. Its task is to do by saving what forest management does by growing. The past year was one of the most successful in the history of the laboratory. The scope of fundamental research was enlarged, its application increased, co-operation work with industrial agencies extended and new methods of disseminating information developed. As examples; standard methods of mechanical wood tests developed here were adopted by the American Society for Testing Materials. A committee representing 13 national organizations adopted specifications for railroad ties proposed by two sponsors appointed by them, one being the Forest Service. An exhaustive research was made to determine kinds of wood and manufacturing conditions necessary to insure efficient airplane propellers. It has developed the fact that practically all commercial American woods may be used under proper manufacturing conditions. This knowledge during the past war period would have saved enormous expenditures for mahogany and walnut. The proper gluing of woods; the causes of weaknesses. the use of boxes, crates and

fiber containers, which require approximately 16 per cent of our lumber; and the elimination of waste in wood using have all been studied, together with kiln-drying methods. The production of sugar and ethyl alcohol from mill waste and sawdust was investigated and showed that a 25 per cent increase of convertible sugars could be secured without appreciable increase in expense. Educational classes in kiln-drying, boxing and crating were given to industrial representatives. Also the publication of results of laboratory research was given to the press and technical and popular magazines, and a wide circle of readers reached. To promote the diffusion of knowledge of forestry generally and secure best results in the efforts of all parts of the service to bring about better protection of the national forests, informational and educational activities have been carried on through schools and organizations. Exhibits and motion pictures have been shown and co-operation has been given through educational agencies to the end that enlightened action on the needs and aims of forestry for the entire nation may be secured.

H. R. KYLIE,
Forest Service, United States Department of
Agriculture.

FORSYTHE, Grace Strachan, American educator and school reformer: b. Buffalo, N. Y., 1863; d. New York City, 21 July 1922. Her father was the proprietor of a small soap and candle manufacturing business and she was one of nine children. At the age of 16 she was graduated from the State normal school of Buffalo, taught in various public schools in Buffalo and in 1896 was made principal of public school 42, in Brooklyn. Four years later she was promoted to be an assistant superintendent of schools. In 1904 she was made a district superintendent and began her campaign of "equal pay for equal work" for the right of a married woman teacher to hold her position; and for many other reforms and innovations in the local schools system. In 1904 also she turned her house, 293 Henry Street, Brooklyn, into a club house for teachers where they might discuss the problems of their profession. In 1907 she became president of the Interborough Association of Women Teachers founded in 1906 and of which she had been chairman. Under her leadership bills providing for the standardization of pay were introduced at Albany, N. Y., in 1907, 1908 and 1909. Each year the bills were passed by the assembly and senate but vetoed by Mayor McClellan and Gov. Charles E. Hughes. In 1912 the 15,000 members of her organization had the satisfaction of seeing the bill passed signed by Mayor Gaynor and Governor Dix. In 1916 she campaigned through New York State in behalf of the teachers' pension bill, and during the trip Timothy J. Forsythe, to whom she was married at Fairhaven, Vt., in 1917, acted as her press agent. In 1921 Mrs. Forsythe was appointed a member of the board of examiners to fill a temporary vacancy, and soon afterwards was re-elected for the 13th time to head the Interborough Association of Teachers. She was elected chairman of the woman's civic committee and actively campaigned for the re-election of Mayor Hylan. In January 1922, she was appointed to be associate superintendent of

schools, the first woman to hold this post. Mrs. Forsythe had had 29 years of consecutive service in the New York public schools; and because of her unceasing fight to better the condition of her sister-teachers she was known as "the stormy petrel of the schools."

FOUR-POWER TREATY. See WASHINGTON CONFERENCE.

FOWL CHOLERA. See HEMORRHAGIC SEPTICEMIA.

FOX, Richard Kyle, Irish-American patron of sports, editor and publisher: b. Belfast, Ireland, 1846; d. Red Bank, N. J., 14 Nov. 1922. At the age of 12 he became an office boy of *The Banner of Ulster*, a religious journal and a few years later was employed in the office of *The Belfast News Letter*, where he remained 12 years. In 1874, he landed at Castle Garden, New York, with an empty pocket and no friends. Three days after his arrival he obtained work in the office of the *Wall Street Journal* and in 1875 became manager of *The Police Gazette*, then little known. In 1876 he bought an interest in this paper and in 1877 became sole owner. He changed its policy and soon made it the leading sporting publication of the United States. In order to make the paper popular he offered prizes and is said to have disposed of more than \$1,000,000 in this manner. The trophy that was best known was the diamond-studded belt (costing more than \$4,000) emblematic of the world's boxing championship. This was of gold studded with diamonds, rubies, emeralds and sapphires. Jake Kilrain first defended it against Joe Smith in England and John L. Sullivan took it from him at Richburg, Miss. When Sullivan refused to meet Joe McAuliffe, the latter took it from him. Frank Slavin of Australia won it from McAuliffe. Mr. Fox offered belts for middleweights and lightweights, gave medals for sculling, football, shooting, running, wrestling and every branch of the sport. He offered \$25,000 if Sullivan would meet Slavin after the latter had defeated McAuliffe and try to win back the diamond-studded belt; put up \$5,000 of the \$10,000 stakes for which Paddy Ryan fought John L. Sullivan and put up Kilrain's part of the \$20,000 purse for which he and Sullivan fought. Mr. Fox was a favorite with English sportsmen and it was in his light road wagon that the Earl of Lonsdale raced to win a wager of \$30,000 made with Lord Shrewsbury.

FOX FARMS. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF; FUR FARMS.

FRANCE, a republic of western Europe with an area of 212,659 square miles. Of this area, 5,605 square miles were added as a result of the World War. The districts added consisted of Lower Alsace, Upper Alsace and Lorraine and are now included in the departments of Haut-Rhin, Bas-Rhin and Moselle. The population added by the accession of these departments was 1,709,749.

Population.—At the census of March 1921 there were in France 39,209,766 people, not including 192,973 military and naval forces and crews of the merchant marine abroad. In the same year there were 1,550,449 foreign residents in France. The area and population of the 90 departments are as follows:

DEPARTMENT	Area, square miles	Population (census, March 1921)
Ain.....	2,248	315,757
Aisne.....	2,866	421,515
Allier.....	2,848	370,950
Alpes, Lower.....	2,697	91,882
Alpes, Upper.....	2,178	89,275
Alpes, Maritime.....	1,443	357,759
Ardeche.....	2,144	294,308
Ardenne.....	2,027	277,811
Ariege.....	1,892	172,851
Aube.....	2,326	227,839
Aude.....	2,448	287,052
Aveyron.....	3,385	332,940
Belfort (Territory).....	235	94,338
Bouches-du-Rhone.....	2,025	841,996
Calvados.....	2,197	384,730
Cantal.....	2,229	199,402
Charente.....	2,305	316,279
Charente-Inferieure.....	2,791	418,310
Cher.....	2,819	304,800
Correze.....	2,272	273,808
Corse.....	3,367	281,959
Cote-d'Or.....	3,391	321,088
Cotes-du-Nord.....	2,786	557,824
Creuse.....	2,163	228,344
Dordogne.....	3,550	396,742
Doubs.....	2,052	285,022
Drome.....	2,532	263,509
Eure.....	2,330	303,159
Eure-et-Loir.....	2,291	251,255
Finistere.....	2,729	762,514
Gard.....	2,270	396,169
Garonne, Haute.....	2,457	424,582
Gers.....	2,428	194,406
Gironde.....	4,140	819,404
Herault.....	2,402	488,215
Ille-et-Vilaine.....	2,697	558,574
Indre.....	2,664	260,535
Indre-et-Vilaine.....	2,664	327,743
Indre-et-Loire.....	2,377	525,522
Isere.....	3,178	229,062
Jura.....	1,951	263,937
Landes.....	3,604	251,528
Loir-et-Cher.....	2,478	637,130
Loire.....	1,852	268,910
Loire (Haute).....	1,930	649,723
Loire-Inferieure.....	2,693	337,224
Lot.....	2,629	176,889
Lot-et-Garonne.....	2,017	239,972
Lozere.....	2,078	108,822
Maine-et-Loire.....	1,996	474,786
Manche.....	2,811	425,512
Marne.....	2,475	366,734
Marne (Haute).....	3,167	198,865
Mayenne.....	2,420	262,447
Meurthe-et-Moselle.....	1,986	503,810
Meuse.....	2,036	207,309
Morbihan.....	2,408	546,047
Moselle.....	2,738	589,120
Nievre.....	2,403	270,148
Nord.....	2,658	1,787,918
Oise.....	2,228	387,760
Orne.....	2,272	274,814
Pas-de-Calais.....	2,371	989,967
Puy-de-Dome.....	2,606	490,560
Pyrenees, Basses.....	3,090	402,981
Pyrenees, Orientales.....	2,977	217,503
Rhin, Bas.....	1,598	651,586
Rhin, Haut.....	1,848	468,943
Rhone.....	1,354	956,566
Saone, Haute.....	1,104	228,348
Saone-et-Loire.....	2,074	554,816
Sarthe.....	3,330	389,235
Savoie.....	2,410	224,874
Savoie, Haute.....	2,388	235,668
Seine.....	1,774	4,411,691
Seine Inferieure.....	185	880,671
Seine-et-Marne.....	2,448	349,234
Seine-et-Oise.....	2,275	921,673
Sèvres (Deux).....	2,184	310,060
Somme.....	2,337	452,624
Tarn.....	2,443	295,588
Tarn-et-Garonne.....	2,231	159,559
Var.....	1,440	322,945
Vaucluse.....	2,333	219,602
Vendee.....	1,381	397,292
Vienne.....	2,690	306,248
Vienne, Haute.....	2,711	350,235
Vosges.....	2,119	383,684
Yonne.....	2,303	273,118
Yonne.....	2,892	273,118
Total.....	212,659	39,209,766

The movement of the population for the year 1920 was, for the whole of France, 623,869 marriages, 834,411 living births, 674,621 deaths and 38,641 still-births. In the same year there were 29,156 divorces. On 13 Dec. 1922 the *Journal Officiel* published statistics showing that the nation's births during the first semestre of 1922 exceeded the deaths by only 9,045. The births for the first six months of the year were 316,726, compared to 421,180 during the corresponding period of 1921. The deaths for the first six months of 1922 were 387,681, compared with 348,329 in the corresponding period of 1921. Thus, while the births decreased 25,454, the deaths increased 39,352. This lowers the excess of births over deaths from 72,851 during the first semestre of 1921 to 9,045 for the corresponding period of 1922. Marriages during the same time dropped from 238,195 to 193,454. Divorces decreased also but not in a proportionate difference, the drop being only 260. The population of the chief cities in 1921 was as follows: Paris, 2,906,472; Marseilles, 586,341; Lyons, 561,592; Bordeaux, 267,409; Lille, 200,952; Nantes, 183,704; Toulouse, 175,434; Saint Etienne, 167,967; Strasbourg, 166,767; Nice, 155,839; Le Havre, 163,374; Rouen, 123,712; Roubaix, 113,265; Nancy, 113,226; Toulon 106,331, and Mulhouse, 99,226. Of the population about 56 per cent is rural and 44 urban.

Religion.—Since the passage of the separation Law in 1905 no form of religion is recognized by the state. The churches continue at the disposal of the ministers of religion and their worshippers under certain formalities. Roman Catholicism is the prevailing faith of the people of France. This church has 17 archbishops and 68 bishops and 51,000 clergy of all grades, exclusive of Alsace-Lorraine, Algeria or the French overseas colonies. There are about 1,000,000 Protestants in all France. Those of the Augsburg Confession are governed by a General Consistory and the Reformed Church by a Council of Administration.

Education.—In 1921 there were in France 68,122 primary schools with 102,498 teachers and 3,839,468 pupils. Primary education is free and compulsory from the age of six to that of 13. Secondary education is provided in the Lycees and in communal colleges and in free schools supported by individuals and societies. There are in France and Algeria, exclusive of Alsace-Lorraine, 67,710 pupils in lycees, 32,475 in communal colleges, 45,160 girls in the secondary institutes for girls. For higher education there are the universities, special schools and private faculties. There are 16 universities, many of ancient foundation. These are located at Aix-en-Provence, Besancon, Bordeaux, Caen, Clermont-Ferrand, Dijon, Grenoble, Lille, Lyon, Montpellier, Nancy, Paris, Poitiers, Rennes, Strasbourg and Toulouse. The total number of students in the universities is 29,058. There are 15 faculties of law, nine faculties of medicine, 17 faculties of science, 17 of letters, eight higher pharmacy schools and mixed faculties of medicine and pharmacy, and 15 schools with full functions and preparatory schools of medicine and pharmacy. In 1921 there were 17,376 students of law in state institutions, 11,344 students of medicine, 10,918 students of the sciences,

7,892 students of letters and 2,197 students of pharmacy. There are free faculties at Paris (Institut Catholique de Paris), Angers, Lille, Lyon, Marseilles and Toulouse. In addition there are several institutions of higher learning dependent on the various ministries other than the Ministry of Public Instruction, such as schools of commerce, arts and trades, veterinary schools, forestry schools, the military and naval schools and engineering schools. There are also several technical schools of lower grade dependent on the Ministry of Public Instruction.

Agriculture.—Of the total area of France about 67 per cent is arable and of this fully two-thirds are cultivated or under pasture. In 1921 13,245,000 acres were planted under wheat and yielded 8,784,000 metric tons of wheat; 8,346,000 acres were planted to oats, the yield from which was 3,559,000 metric tons; 2,185,000 acres were planted to rye and yielded 11,302,000 metric tons; 1,662,000 acres were planted to barley and yielded 823,000 metric tons; 271,000 acres were planted under mixed corn and yielded 1,460,000 metric tons; 3,230,000 acres were planted to potatoes and yielded 9,878,000 metric tons. About 250,000 acres were planted with sugar beets, the yield from which was 2,100,000 metric tons. In the same year there were 3,750,000 acres under vines, the output from which amounted to 1,255,000,000 gallons of wine. About 350,000 gallons of cider were produced the same year. Hops were grown on 10,800 acres and yielded 3,044 tons; tobacco was grown on 32,000 acres and the crop was 17,650 tons. Flax was grown on 44,900 acres which produced 6,954 tons of seed and 10,069 tons of fibre. Hemp was planted on 17,400 acres, the crop being 1,524 tons of seed and 5,969 tons of fibre. The yield of millet in 1921 was 11,098 metric tons; of buckwheat 260,683 tons; forage cabbage, 2,692,962 tons; Jerusalem artichokes, 919,763 tons; forage turnips, 1,726,906 tons; distillery beets, 313,704 tons; forage beets, 14,325,987 tons; hay from irrigated lands, 8,322,712 tons; hay from hay meadows, 842,460 tons; hay from green feed pasture, 6,733,399 tons; hay from natural prairies, 13,268,152 tons; beans, 65,024 tons; lentils, 2,872 tons; peas, 12,956 tons, and broad beans, 60,033 tons. The continuous drought of 1921 was reflected in the reduced yields which were in every case below those of the year previous, while they show a falling off of over 50 per cent as compared with 1913, despite the inclusion of the Alsace-Lorraine figures in the returns for 1921. Of table fruits and nuts the yield in 1921 was as follows: Table apples, 144,188 tons; chestnuts, 165,557; olives, 72,613; apricots, 8,344 tons; plums, 14,860 tons; oranges, 983 tons; lemons, 580 tons; raspberries, 647 tons; gooseberries, 1,581 tons; small nuts, 94 tons; truffles, 73 tons; table pears, 52,067 tons; walnuts, 22,201 tons; peaches, 19,511 tons; cherries, 27,476 tons; plums for drying, 6,044 tons; tangerines, 516 tons; strawberries, 7,374 tons; black currants, 1,999 tons; almonds, 7,429 tons, and figs, 2,241 tons.

The French wheat crop for 1922 was estimated at 235,000,000 bushels, or 73 per cent of the crop of 1913; the spelt crop was 4,500,000 bushels, or 80 per cent of that of 1913; the rye crop 34,400,000, or 70 per cent; barley 39,500,000,

or 82 per cent; and oats 288,000,000 bushels, or 80 per cent of the 1913 crop. The normal French pre-war production of wheat was about 325,000,000 bushels the normal consumption 340,000,000 to 345,000,000. The shortage in 1922 (requirement production) was somewhat over 100,000,000 bushels. Due to the fact that the harvest was one month late, provision had to be made for only 11 months before the next expected harvest. This fact indicated a saving of over 22,000,000 bushels. A further saving of 14,000,000 bushels was expected as a result of the long milling regulations, or a total saving of 36,000,000 bushels. Wet weather, however, injured the crop to the extent of 14,000,000 bushels, and the net saving was, therefore, only 22,000,000 bushels, thus making it necessary for France to import over 80,000,000 bushels. As noted above, not only is the wheat crop short, but the other grain crops are also short when compared to the normal pre-war production. Compared with 1921 the barley crop is about the same, while oats show an increased production of 43,000,000 bushels. The decreased production of the 1922 crop as compared with 1913 is largely due to the decreased acreage which was the result of the shortage of farm labor and the decline in the price of wheat which fell from 100 francs per 100 kilos on 1 Aug. 1921 to 70 francs in March 1922.

Coal Production.—The production of coal in 1921 reached 28,240,887 tons, to which must be added 735,608 tons of lignite, making a grand total of 28,976,495 tons as compared with an annual average of 40,000,000 tons prior to the war. France imported 22,044,591 tons of coal in 1921 and exported 2,313,265 tons, leaving the figure of French coal consumption at 48,707,821 tons. The consumption in 1921 was 6,000,000 tons less than in 1920 which is striking evidence of the industrial crisis through which the country passed in 1921. The unusually heavy exports of coal in 1921 were due principally to shipments to Great Britain during the strike of the British miners.

Other Mining Products.—The iron resources of France were estimated at 3,300,000,000 metric tons before the war, or 300,000,000 tons less than Germany and 2,000,000,000 tons greater than England. The discovery of new basins since 1910 has brought the estimate of French deposits up to something between 3,800,000,000 and 4,100,000,000 metric tons. Owing to the recovery of the Lorraine basins, the total iron resources of France at the present time (aside from the new mines discovered) are 5,500,000,000 metric tons and those of Germany, 1,270,000,000 tons. The exploitable iron-ore deposits of Algeria and Tunis are estimated at 100,000,000 to 150,000,000 metric tons. During the year 1922, 16,667,900 metric tons of iron ore were mined in France, as compared with 14,106,068 metric tons in 1921, and 13,846,122 metric tons in 1920. In 1913 French iron-ore production amounted to 21,917,870 metric tons, to which amount should be added 21,136,265 metric tons produced in the Metz-Thionville basin, which was German at the time. The 1921 output represents only about one-third of the production realized in 1913 within the present boundaries of France. The table below shows a

comparison of the iron-ore production of the principal regions for the years 1920 and 1921 (given in metric tons).

REGIONS	1920	1921	Per cent of increase (+) or decrease (—)
Lorraine:	<i>Tons</i>	<i>Tons</i>	
Metz-Thionville..	8,074,989	7,816,674	—4
Briey.....	3,466,388	4,033,697	+16
Longwy.....	666,797	789,159	+18
Nancy.....	839,180	605,644	—28
Normandy.....	357,200	511,923	+43
Anjou, Brittany.....	119,984	147,438	+22
Pyrenees.....	213,782	115,967	—46
Other regions.....	107,802	85,566	—21
Total.....	13,846,122	14,106,068	+1.8

Lead, silver and zinc were also mined to the extent of 30,000 tons, copper and tin to the extent of 1,000 tons. Other minerals were gold, manganese and antimony. Potash was produced in Alsace to the amount of 1,000,000 tons.

Commerce.—The year 1921 was one of economic crisis. In 1921 the foreign trade of France, exclusive of gold, silver, bullion and the baser coins, reached 45,101,574,000 francs (\$3,340,857,300 at 13.50 francs to the dollar), compared with 76,799,835,000 francs (\$5,296,540,300 at 14.50 francs to the dollar) in 1920 and 15,301,549,000 francs (\$2,953,198,900 at 5.18 francs to the dollar) in 1913. Imports in 1921 amounted to 23,548,473,000 (\$1,744,331,300), against 49,904,897,000 francs (\$3,441,717,000) in 1920; while the value of exports was 21,553,101,000 francs (\$1,596,526,000) in 1921 compared with 26,894,938,000 francs (\$1,854,823,300) in 1920. The United States Department of Commerce furnishes the following statistics of French trade (exclusive of specie and bullion), by principal countries of origin and destination, during 1913, 1920 and 1921:

FRENCH IMPORTS AND EXPORTS, BY COUNTRIES.

COUNTRIES OF ORIGIN OR DESTINATION	1913	1920	1921
IMPORTS			
United States.....	\$172,685,200	\$749,386,300	\$265,317,700
Great Britain.....	215,221,200	811,599,500	234,561,900
Germany.....	206,278,400	183,997,500	183,440,400
Belgium.....	107,361,500	229,343,700	132,839,800
Argentina.....	71,268,700	206,323,200	61,694,400
Italy.....	46,419,000	88,451,700	42,048,700
Spain.....	54,347,300	72,584,800	37,731,700
Switzerland.....	26,101,700	71,993,500	29,518,000
Brazil.....	33,634,700	62,145,300	41,264,100
Algeria.....	63,852,300	72,654,600	83,611,300
Morocco.....	3,942,800	13,351,400	8,446,900
Other.....	624,204,200	979,885,500	623,856,400
Total imports.....	1,625,317,000	3,441,717,000	1,744,331,300
EXPORTS			
United States.....	\$81,566,200	\$155,621,700	\$151,089,700
Great Britain.....	280,600,200	291,949,500	248,506,400
Germany.....	167,285,800	103,594,300	174,538,600
Belgium.....	213,940,300	308,892,200	303,027,900
Argentina.....	38,582,400	30,711,900	18,465,600
Italy.....	59,018,600	86,120,100	57,135,900
Spain.....	29,187,800	66,864,200	43,652,500
Switzerland.....	78,378,000	123,581,500	86,603,100
Brazil.....	16,670,400	25,023,900	9,592,800
Algeria.....	106,644,300	157,937,700	107,245,100
Morocco.....	15,207,300	44,805,100	33,768,100
Other.....	240,791,600	459,721,200	362,900,300
Total exports.....	\$1,327,881,900	\$1,854,823,300	\$1,596,526,000

French foreign commerce statistics for the year 1922 show a grand total of 20,642,000,000 francs for exports and 23,900,000,000 francs for imports. Of the exports Great Britain took 3,855,538,000 francs; Belgium 3,795,098,000 francs, and the United States, 1,972,689,000 francs. Imports to the value of 3,853,618,000 francs came from the United States; and 1,229,036,000 francs from Germany.

Shipping Statistics.—According to the French official statistics, during 1921, 7,776 loaded French vessels of 8,595,738 tons register and 15,144 vessels of other nationalities, registering 18,702,817 tons, arrived in French ports, as compared with 8,021 French vessels of 7,426,723 tons register and 23,741 foreign vessels of 21,363,676 tons arriving during 1920.

Vessels clearing from French ports during 1921 numbered 6,122 French of 6,745,905 tons register and 11,631 foreign of 14,880,560 tons, as compared with 5,701 French of 5,291,395 tons and 11,623 foreign of 11,655,630 tons in 1920. Taking the arrivals and clearances of loaded French and foreign vessels together, the total of French shipping in 1921 was 40,673 vessels of 48,925,020 tons register, as compared with 49,086 vessels of 45,737,424 tons in 1920.

Merchandise loaded and discharged in the ports of France in 1921 mounted to 27,210,838 metric tons, contrasted with 42,218,504 metric tons in 1913.

Finance, Banking and Credit.—The year 1921 was for France, as throughout the world, one of financial depression, the sequence not unexpected, of the inflated boom of 1920. Manufacturers were overstocked with raw materials purchased for the 1920 expansion, prices fell rapidly and it was necessary to use up surplus stocks, generally at a loss, before business could rise again on a more solid foundation. It is probable that the great absorption of available capital in the work of reconstruction and for the liquidation of the cost of the war during 1919 and 1920 had an indirect effect of benefit

to France during 1921, by hindering the industrial overexpansion so prevalent in other countries.

What was achieved in 1921 toward the solution of the State financial problems? First, in spite of the depression, the actual budgetary revenue was increased by some 1,950,000,000 francs. Second, the State withdrew during 1921 from its control of the wheat and coal markets, the merchant marine, and purchase of petroleum, thus practically retiring from business save in the long-established ordinary monopolies of tobacco, matches, playing cards, etc. Third, the special accounts created during the war have been practically closed, and the extraordinary budget reduced to such an extent that in 1922 it was incorporated in the general budget. The financing by the government to complete its required revenue also underwent a change. Whereas for 1920 the State had issued long-term loans, it developed during 1921 that more favorable conditions could be found by the government in short-term notes, although this policy is not generally looked upon with favor, it had in this case distinct advantages, for the capital seeking long-term investment remained available for industrial loans at a rate which would have been greatly increased had the flotation of a large issue of State bonds been attempted. In this way the amount of outstanding national defense bonds increased enormously during the year, and a new series of treasury notes at 6 per cent for two years was issued, to the total of about 5,500,000,000 francs.

Operations of the Bank of France.—The clearing up of the moratorium of 1914 has continued with rapid strides. On 24 Dec. 1921 the amount of prorogued bills held by the Bank of France was 57,826,580 francs, as compared with 409,246,440 francs on 24 Dec. 1920, or a reduction during the year of 351,419,860 francs. In all, the reduction since 1914 is 4,418,000,000 francs from a maximum of 4,476,000,000 francs, or 98.7 per cent. In keeping with the general effort to improve a grave situation and to assist commercial and industrial enterprises to regain their feet, the Bank of France discount rate on commercial paper, which had been raised to 6 per cent on 8 April 1920 was reduced to 5½ per cent on 28 July 1921, with the rate on collateral loans remaining at 6½ per cent. The wide extension of credit by the bank is shown by the great increase in the number of bills discounted, although they average smaller amounts than those discounted in 1920. During 1921, 15,343,800 bills for 30,798,829,000 francs were discounted, as against a total of 12,321,400 bills for 32,023,610,000 francs during 1920. The average of bills held by the bank during the year, exclusive of those prorogued under the moratorium of 1914 or treasury bills discounted, was 2,686,800,000 francs, with a high of 3,344,000,000 francs on 5 January, and a low of 2,216,700,000 francs of 7 December. In December 1921 there were bank notes outstanding to the amount of 36,417,373,045 francs, as compared with 37,901,958,650 francs on the corresponding date of 1920. The maximum amount outstanding during the year was 38,832,838,900 francs of 4 May, and the minimum 36,246,215,500 francs on 21 December. In reserve against

this decreasing but still great quantity of paper money the Bank of France held on 24 Dec. 1921 5,524,185,000 francs gold and 279,793,000 francs silver, or a total metallic reserve of 5,803,978,000 francs, compared with 5,766,270,000 francs (5,500,155,000 francs gold and 266,115,000 francs silver) in December 1920. Thus the gold reserves were increased during the year by 24,030,000 francs and the silver by 13,678,000 francs. Of this gold, 1,948,367,000 francs is held in the Bank of England for account of the Bank of France against war credits extended and is recoverable as the credits are liquidated. According to the *Journal Officiel*, the situation on 31 May 1922 of the French budget credits for the 1922 fiscal year was as follows:

Ordinary budget:	Francs
Total credits opened for the 1922 budget.....	25,471,884,880
Amount of warrants issued during May, 1922.....	2,539,337,016
Amounts of warrants issued during previous months.....	4,446,480,716
Total of warrants issued up to 31 May 1922.....	6,985,817,732
Special budget for expenditures recoverable from Germany:	
Total credits opened for the 1922 budget.....	10,482,539,563
Amount of warrants during May, 1922.....	1,275,449,686
Amounts of warrants issued previously.....	1,303,445,570
Total of warrants issued up to 31 May 1922.....	2,578,895,257
Special account (upkeep of armies of occupation in foreign countries):	
Total credits opened for the 1922 budget.....	512,336,700
Amount of warrants issued during May, 1922.....	30,695,767
Amount of warrants issued during previous months.....	111,467,045
Total of warrants issued up to 31 May 1922.....	142,162,812

On 24 October the French Chamber of Deputies opened the debates on the general budget for 1923. The basis for the discussion was the report of the chamber finance committee, which provided for total expenditures of 22,925,000,000 francs, divided into: Debt charges, 11,501,000,000 francs; civil expenditures, 6,612,000,000 francs; national defense, 4,812,000,000 francs. The total represented a reduction of approximately 272,000,000 francs from the original estimates proposed by the Minister of Finances. Receipts are estimated at 22,927,000,000 francs, including the foreseen deficit of 3,710,000,000 francs, which must be secured by borrowing. The chairman of the senate finance committee made public the following resume of the assets and liabilities of the French state on 14 Nov. 1922:

LIABILITIES	Francs
Public debt.....	337,000,000,000
Unpaid interest on foreign debt.....	5,000,000,000
Reparations debt.....	132,000,000,000
Special accounts.....	1,000,000,000
Total.....	475,000,000,000
ASSETS	
Claim against Germany.....	124,000,000,000
Other claims on foreign governments.....	15,000,000,000
Total.....	139,000,000,000

The foreign debt is 75,164,000,000 francs, with an annual interest charge of 4,168,100,000

francs. In 1912 (time of last estimate) the national wealth of France was placed at 304,517,000,000 francs.

Army.—The army is divided into the metropolitan and colonial divisions. The former is divided into the active army, the reserve, and the territorial army. The peace establishment of the metropolitan army is 390,000, exclusive of the 95,000 men in the armies of occupation on the Rhine. The total peace establishment of both the metropolitan and colonial armies at the beginning of 1922 was 736,000 officers and men.

Navy.—In 1922 France had seven battleships of the dreadnought class, two pre-dreadnoughts, 8 armored cruisers, 5 light cruisers, 55 despatch vessels, 71 destroyers, 58 torpedo boats, and 53 submarines. The naval reserve numbers about 115,000 men and the naval personnel about 25,000 men.

Communications.—France has in operation 26,250 miles of railways including Alsace-Lorraine. Electrification of many lines is in progress. There are 5,450 miles of navigable rivers and 3,100 miles of canals. There are 23,899 miles of national roads in addition to the neighborhood roads. There are about 16,000 post-offices, 23,000 telegraph offices and 125,000 miles of telegraphic lines. France has 12,000 urban telephone systems with 37,000 miles of lines.

Government.—The executive power in the republic is vested in the President and the Ministry. The President is elected for a term of seven years by an absolute majority of votes by the senate and chamber of deputies sitting as a national assembly. The President in 1922 was Alexandre Millerand, born 10 Feb. 1859; elected to the presidency 23 Sept. 1920. The Prime Minister from 15 Jan. 1922 was M. Raymond Poincaré. Members of the chamber of deputies are elected for a term of four years by manhood suffrage. Deputies must be over 25 years of age. There are now 610 deputies in the chamber, of whom the political complexion is as follows: 133 Republicans of the Left; 130 Progressives; 83 Socialist Radicals; 72 Liberal Actionists; 68 Unified Socialists; 60 Radicals; 31 Conservatives; 27 Republican Socialists; and 6 Dissident Socialists.

The senate has 314 members, elected for terms of nine years by indirect vote of electors composed of delegates chosen by the communal councils, or of the deputies and district councillors of the departments. The senate has at present 120 Radicals, 58 Republicans of the Left, 23 Progressives, 20 Conservatives, 14 Liberal Republicans, 2 Socialist Republicans and 2 Unified Socialists. Both senators and deputies receive 27,000 francs yearly. Local government is carried on through the departmental and communal councils. The ministries of the central government have each their representatives in the departments. At the head of each department is a prefect who is the appointee of the central government. He supervises the execution of the laws, issues police regulations and nominates subordinate officials. There are in France 37,963 communes.

History.—On 12 January the Briand ministry was overthrown and on the following day Raymond Poincaré, the former president, formed a new cabinet. Briand's fall was due to his

having made certain concessions on reparations from Germany in return for a treaty with Great Britain guaranteeing protection to France against any sudden attack by Germany. The new cabinet was strongly Nationalist in character and took a firm stand in the matter of reparations. A cleavage was narrowly averted with Great Britain over the preliminaries of the Genoa Conference in respect to the guarantees demanded by France before entering that conference. Finally, the French and British premiers met at Boulogne on 25 February. The meeting resulted in a compromise that re-established cordial relations and effected a working program. France received guarantees that at the forthcoming Genoa Conference Britain would permit no limitation of the prerogatives of the League of Nations, no challenge to the treaties made by France since the Treaty of Versailles and no question of the rights of France and her Allies to their dues in the matter of reparations and full compliance of Germany and Russia with the foregoing before these nations be admitted to the conference. On 23 February the budget expenses of 13,500,000,000 francs chargeable to Germany were adopted by the chamber of deputies. The default of Germany in the payment of reparations necessitated the raising of a loan for 8,000,000,000 francs by France and the issue of new treasury bonds. France continued to insist that the government of Germany stop the issue of paper marks. The latter contended that the heavy issues of marks were necessary to meet the reparation claims. The reparations committee met in Paris on 21 March and upheld the decision of the Cannes parley that Germany in 1922 should pay 720,000,000 gold marks in cash and 1,450,000,000 marks gold value in materials. It also decided that the German Reichsbank be made autonomous and that the German budget be balanced by an internal loan of 1,000,000,000 marks gold. The French Finance Minister threatened tax delinquents with garnishee proceedings. It was found that 200,000 persons had failed to make proper returns. President Millerand made a tour of the French African colonies in April and was everywhere received with great demonstrations of welcome. The French colonial policy has come to regard the natives of its African possessions more in the light of citizens of France than mere colonials to be exploited by the mother country.

The signing of the Franco-Turkish Treaty of Angora created a profound reaction in favor of France among her Moslem subjects. On 16 April a colonial exhibition was opened at Marseilles. On the last day of the same month the Premier unveiled at the Pantheon a tablet to the memory of the famous airman, Georges Guynemer. Ex-President Paul Deschanel died on 28 April of pneumonia. He had been forced to resign the presidency the previous September and subsequently became a member of the senate. A French financial commission, headed by Jean V. Parmentier, came to the United States in July to confer with the American War Debt Commission and to present detailed information in regard to the financial resources of France and to show that France was quite unable to meet her obligations for some time to come unless Germany paid her. The mission

was sent to America in response to a measure passed by the congress in February, inviting America's war debtors to repay capital and interest at 4½ per cent and within 25 years. At the time of departure of the mission several French experts declared that even if Germany were to pay 800,000,000 gold marks yearly, it would not cover France's annual indebtedness in interest to the United States and Great Britain on the basis proposed by the Congress of the United States. The debt of France to the United States amounts to \$3,340,857,593. In this connection it was stated that France is paying 50,000,000,000 francs to the devastated regions and the nation's resources taken all together were insufficient to meet war debt interest and amortization in 1922. The Premier was attacked in the chamber on 5 and 6 July on the ground of his alleged responsibility for the war. He was ably defended by a former Premier, M. Viviani, and received a vote of confidence from the chamber. The Washington treaties failed of ratification before the summer recess of the chamber on 8 July. In July it became known that the French Premier had drawn up and intended to present to the Allied Ministers at London a new plan for reparation based on Allied debt cancellation. This plan collapsed when a stern note was received from Great Britain on 1 August declaring that France would be held to payment of her debt to Great Britain at least to the degree that Britain would be held to payment of her debt to the United States. In her reply on 1 September France stated her inability to repay her war debts to her Allies until she had been paid the huge cost of reconstruction of her ruined northern departments. At the same time she favored the plan of a general cancellation of all war debts and to this end proposed a conference of all interested nations. The Premier was deeply chagrined at the failure of the mission to the United States and at a public meeting at Bar-le-Duc on 20 August he reiterated his demand that Germany should be made to pay in full for the damage she had wrought in France; that no moratorium would be granted with the consent of France without full German guarantees and France would exact these even if she had to act alone. On 10 September France reported to the League of Nations that her army strength on that date amounted to 690,000 men and that this force was necessary to her national security because of the spirit of revenge which was being fostered in Germany. On 26 August the battleship *France* was wrecked off Quiberon Bay and was a serious loss to the French navy. In the autumn the financial situation in France was impaired by the heavy cost of reconstruction, which was charged against Germany but which the French were unable to collect. The Finance Minister stated publicly that the 4,000,000,000 franc deficit represented interest on money borrowed to carry on reconstruction for which Germany was supposed to pay. Decreasing confidence in foreign countries that Germany would ever pay France's reparations was a contributing cause of the decline of the franc. On 8 November the quotation for the dollar was 16 francs, 6 centimes. Reconstruction in the devastated regions proceeded during the year; roads, railways and

canals have all been practically restored and factory and industrial plants are very near to complete restoration. Obstacles, shells, etc. have been cleared from the soil but there remain many houses to be rebuilt or definitely repaired. Last reports showed that out of 564,000 houses wholly or partly destroyed by the German invasion, 3,348 had been completely rebuilt; 180,417 had been provisionally repaired and 214,422 definitely repaired. The Turkish victories in the Near East again brought up for solution this age-old problem and the Lausanne Conference was arranged in an attempt to bring peace in that quarter. Meanwhile, an important international gathering was taking place in London in the hope of agreeing on German reparations payments. British and French views were at such complete divergence that the conference failed to reach a solution and to save the Entente an adjournment was taken to 2 Jan. 1923. This London conference opened on 9 December and was attended by the Premiers of Great Britain, France, Belgium and Italy. On behalf of France M. Poincaré offered acceptance of a two-year moratorium for Germany on condition that satisfactory guarantees were provided, including measures for the economic control of the Rhine provinces and occupation of the Ruhr district. The new British Premier, Bonar Law, agreed to consider the matter of the cancellation of debts and stated that he desired a settlement based on a moratorium sufficient for Germany to re-establish her finances and credit and to stabilize the mark, a reduction of the indemnity to between 30,000,000,000 and 40,000,000,000 gold marks and the abandonment by France of all proposals to take military action. The German proposal, prepared by Chancellor Cuno, was presented to Bonar Law on 9 December by Dr. Carl Bergmann. It was rejected as unsatisfactory the day following and its terms were not made public until April 1923. Premier Mussolini of Italy stated that he believed Germany stood in need of a further moratorium and an international loan and that the reparations question should be dealt with in connection with the interallied debts and in relation to the entire financial situation of Europe. The Italian Premier did not think that Europe's debt to the United States should be considered at the same time as it was entirely beside the question. Pressed as to the guarantees provided the Italian Premier replied that his proposals were purely economic and not military. The reduction of reparations as provided in the Italian plan was acceptable to the conference insofar as reparations were to be reduced in proportion to the writing off of the interallied debts. On 10 December Premier Poincaré stated that France was insistent on the occupation of the Ruhr as a guarantee for any moratorium and Bonar Law replied to the effect that Great Britain would not consent to the occupation of the Ruhr and the exploitation of the Rhineland, since she considered such measures as penalties and not economic guarantees. These divergent views could not be reconciled and the conference adjourned to 2 January. The policy of France in the Near East is dealt with elsewhere in this volume. (See NEAR EAST.) This policy as outlined in the chamber by the Premier

appeared to meet with little favor and it was evident that his hold on the country was weakening. The financial administration was attacked in the chamber on 15 November and a cabinet crisis seemed imminent. The Premier, however, rallied to his support majorities in both chamber and senate largely on his assurance of continuing his policy of holding Germany to a strict fulfillment of the terms of the Treaty of Versailles. On 4 December an effort was made to ratify the Washington Treaty for Naval Disarmament. However, considerable opposition developed though it was stated that France was in an economic position to construct capital ships before the time limit imposed by the treaty had expired anyway. On 21 November the senate rejected the women's suffrage bill by a vote of 156 to 134. On 12 November Georges Clemenceau, former Premier, sailed for the United States on what was alleged to be a self-appointed mission to appeal for American co-operation in Europe and to interpret the French point of view to America generally. He was well received in the chief cities of the United States and made several noteworthy addresses appealing for the active participation of America in the efforts to settle the international problems confronting most of the European countries. He returned to France just before Christmas. On 21 December, after Clemenceau had arrived home it was announced that his American visit had added \$20,000 to the American Field Service Fund Fellowships. It was explained that the former Premier was unwilling to accept financial assistance for his mission and his own means were inadequate so he accepted lecture and writing contracts to pay his way. He expressed the desire that any surplus be devoted to the Fellowships, which are intended, among other things, to stimulate friendship between France and America through the education in each country of young men from the other.

FRANKLIN AND MARSHALL COLLEGE, an educational institution for men of the Reformed Church in the United States, founded in 1787 and located at Lancaster, Pa. In 1922-23 it had a faculty of 24 members, 470 students, property valued at \$1,200,000, including an endowment of \$600,000, and an income of \$90,000. Henry Harbrough Apple, LL.D., is president.

FRANKLIN COLLEGE OF INDIANA, a co-educational institution, non-sectarian but affiliated with the Baptist Church. It was founded in 1834 and located at Franklin, Ind. In 1922-23 it had a faculty of 24 members, 423 students, property valued at \$395,000 and an income of \$105,000. Charles Elmer Goodell, A.M., LL.D., is president.

FREAR, William, American chemist and agriculturist: b. Reading, Pa., 24 May 1860; d. State College, Pa., 7 Jan. 1922. He was graduated from the University of Lewisburg (now Bucknell University) in 1881 and in 1883 received the degree of Ph.D. at Wesleyan University. In 1881-83, he was assistant in sciences at Bucknell University and in 1883 became chemist in the United States Department of Agriculture, Washington, D. C. He was professor of agricultural chemistry from 1885-1907 in Penn-

sylvania State College, and after 1907 was professor of experimental agricultural chemistry in the same institution. He was vice-director and chemist, Pennsylvania Agricultural Exposition after 1887; he was chemist to the Pennsylvania State Board of Agriculture from 1888 to 1919; chemist, Pennsylvania Department of Agriculture from 1895 to 1916; and after 1900, special agent of the United States Department of Agriculture. He was also chief chemist, Pennsylvania Bureau of Foods. Doctor Frear was a member of many chemical and agricultural societies; served as chairman of the executive committee of the National Pure Food and Drug Congress; was chairman, National Food Standards Commission, 1902-07, and a member of the Joint Committee on Food Definitions and Standards after 1914. He was editor and proprietor of *Agricultural Science* (1892-94). His writings consist exclusively of contributions to scientific periodicals and experiment station and State reports.

FREER GALLERY OF ART. See SMITHSONIAN INSTITUTION.

FRENCH-AMERICAN CHAMBER OF COMMERCE, Incorporated. This organization was formed to work as an international chamber of commerce for the benefit of manufacturers, merchants, importers and exporters, wholesale and retail, to and from France and her colonies, bankers and others interested in international relations. It has a large membership in both France and the United States and is affiliated with the French Institute in the United States (q.v.), having its headquarters in the same building, 599 Fifth Avenue, New York City. It, of course, will move with the institute to the latter's new building at 20-22 East 60th Street, New York, when that structure is completed. The Chamber follows the practice of active economic associations in the United States in the diffusion of information relative to commercial and industrial matters. Its officers for 1923 are John Aspegren, president; J. J. Larkin, vice-president; McDougall Hawkes, chairman of the board; Samuel W. Fairchild and John A. Penton, vice-chairmen of the board; Emile C. Juen, secretary and treasurer.

FRENCH CONGO. See FRENCH EQUATORIAL AFRICA.

FRENCH EQUATORIAL AFRICA, or FRENCH CONGO, a French colony on the west coast of Africa extending along the Atlantic coast between Cameroon and the Belgian Congo. Its hinterland boundaries are the Congo and Ubanghi rivers. The term as now employed includes Gabon, the Middle Congo, the Ubanghi-Shari, the Chad colonies and the Cameroon territories. The area is about 982,049 square miles with a population estimated at nine millions of negro and other races. Each division is under a Lieutenant-Governor, has separate financial and administrative autonomy and an administrative council. The governors are under the Governor-General of French Equatorial Africa. There is a general budget and also a separate budget for each colony. In 1921 the general budget was for 8,845,402 francs; the Gabon budget was 4,149,500 francs; Middle Congo, 4,325,000 francs; Ubanghi-Shari, 3,514,000 francs; Chad Colony, 3,850,-

000 francs. There are 45 mission schools in the colony with 3,000 boy pupils and 10 mission schools with 750 girl pupils; 95 public schools with 4,000 pupils. There are in the colony extensive forests with many species of commercial value. The resources of the region are undeveloped. Rubber, palm oil and coffee are the chief products. Stock-raising is suited to the Chad region, and development has begun there but facilities for export are lacking. Copper, zinc and lead are found. Total exports in 1920 amounted in value to 31,246,248 francs and imports to 18,370,512 francs. The chief ports of the region are Libreville and Port Gentil and Loango. Railway construction is under way to connect Brazzaville with the coast. There are about 2,500 miles of telegraph line in the colony. The Governor-General of Equatorial Africa in 1922 was M. Alfassa, who received his present appointment in 1921.

FRENCH GUIANA, a French colony and penal settlement on the continent of South America. The area is 32,000 square miles and the population 49,000. Cayenne, the capital and only seaport, has a population of 13,527. The annual budget of the colony amounts to 3,500,000 francs yearly. There are immense timber forests rich in woods of the commercial kind. The chief crops are rice, Indian corn, manioc, cocoa, coffee, sugar, tobacco, gutta percha and indigo. Gold mining is the most important industry. Silver, iron and phosphates are also found. Exports of the colony in 1920 were valued at 42,674,734 francs and the imports at 40,405,823 francs. The penal population in 1920 numbered 3,633. The colony is administered by a Governor assisted by a Privy Council of five members. There is also a Council-General of 16 members elected by the French citizens residing in the colony. The colony sends one deputy to the French Chamber at Paris.

FRENCH GUINEA. See FRENCH WEST AFRICA.

FRENCH INDIA, the French possessions or five separate dependencies with an aggregate area of 196 square miles. The population in 1921 was as follows: Pondichery, 170,846; Karikal, 53,027; Chandernaga, 25,423; Mahe, 11,199, and Yanam, 4,705; total, 265,200. The Indian colony is represented at Paris by one senator and one deputy. A Governor resides at Pondichery. He is assisted by a general council. There are about 10,000 school pupils in the colony. The chief crops are rice, cotton, sugar, manioc, cacao, coffee and nuts. There are cotton mills and oil factories at Pondichery. There is a large import and export trade. There are 43 miles of railways open in the colony.

FRENCH INDO-CHINA, a portion of southeastern Asia now under France. It has an area of 310,344 square miles and a population of 16,990,229. It consists of the five states of Cochin-China, the protectorates of Annam, Cambodia, Tonking and Laos and Kwang-Chau-Wan leased from China. The whole territory is under a Governor-General and each state has a resident-superior, except Cochin-China which is a direct French colony. There are 23,700 Europeans in the region, all of whom are subject to French law. There is a federal budget for the

five states and a separate one for each. The debt of the region in 1922 was 403,000,000 francs. There is a military force of about 25,000 men. Rice, fish, hides, coal, cotton, rubber and sugar are the chief articles of export and are valued at \$100,000,000 yearly. Textiles and tin are the chief imports. There are 1,265 miles of railways and 350 postoffices. See separate articles on the states and protectorates.

FRENCH INSTITUTE IN THE UNITED STATES. This organization was chartered by the Regents of the University of the State of New York in December 1911. The movement which resulted in its being founded was started in Paris, France, in the spring of that year. The promoters were French and American citizens of distinction in all callings of life, who believed that the interests of both countries would be advanced by the creation of an organization which would address itself in particular to citizens of the United States rather than to persons born in Europe and coming to the United States. The institute is non-political; it having been founded for educational purposes only. It is supported by residents of America who are interested in foreign relations and its endowment fund and its lecture and publication foundations are the gifts of Americans. All of its trustees are citizens of the United States. It is said to be the most influential French-American society in the United States and its ramifications extend throughout the country. It consists of three sections: 1. Arts—the "Museum of French Art," formed for the purpose of diffusing among the citizens of the United States a knowledge of the arts of France in their various manifestations, and of French literature and the French language, to permit understanding these manifestations. 2. Belles-Lettres—the "French Union,"—literature, history and philosophy association, chartered by the State Regents of New York in 1918, to diffuse a knowledge of French in the public and private schools and universities throughout the United States. It awards medals and prizes to students for proficiency in French. 3. Economics and Science—"Entente France-America,"—commerce, industry and science society, incorporated, with which is affiliated the French-American Chamber of Commerce, Incorporated (q.v.). This section deals with economic relations between the United States and France. The institute has approximately 1,000 annual members in New York City and 500 life members, perpetual fellows and patrons scattered throughout the United States. The administrative office, on 1 Jan. was located at 599 Fifth Avenue, New York City, but during the fall of 1922 the institute purchased lots Nos. 20-22 East 60th Street, New York, upon which it will erect a building 90 feet high, into which it expects to move before the close of 1923. This new building will be the centre of all French-American activities in America. The museum will occupy certain rooms in which will be housed the extensive collections of the institute and its large library of information relative to France. The officers of the institute for the year 1923 are McDougall Hawkes, president; Henry Alfred Todd, Samuel W. Fairchild, William A. Clark and John Aspegren, vice-presidents; Thomas Hastings, general secretary.

FRENCH IVORY COAST. See FRENCH WEST AFRICA.

FRENCH LANGUAGE AND LITERATURE. See LITERATURE; PHILOLOGY, MODERN.

FRENCH SOMALILAND, a colony of France in northeast Africa between the Italian colony of Eritrea and British Somaliland. It reaches inland to a distance of 56 miles from the coast, has an area of 5,790 square miles and a population of 65,000. It is ruled by a Governor and an administrative council. The capital of the colony is Djibouti, which has a population of 8,366, including 354 Europeans. The budget for 1921 called for 5,255,000 francs. There is a railway from the capital inland to Addis Abeba in Abyssinia, 485 miles. Salt mining and coast fishing are the chief industries. There is a large inland trade and much of the foreign trade of Abyssinia passes through the colony. Coffee, ivory, hides and skins are exported and cotton goods, coal, butter and sugar are the chief imports. The total imports in 1919 amounted to 106,301,216 francs and the exports to 66,816,294 francs. There is regular steamer communication between the capital and the British colony of Aden.

FRENCH SUDAN. See FRENCH WEST AFRICA.

FRENCH WEST AFRICA. The French possessions in this region include: Senegal, French Guinea, the Ivory Coast, Dahomey, Upper Senegal-Niger, also called French Sudan, Upper Volta, Mauritania and the Territory of the Niger. The approximate area and population of these possessions according to the census of 1921 are as follows:

COLONY	Area, square miles	Population
Senegal.....	74,112	1,225,523
Guinea.....	95,218	1,875,996
Ivory Coast.....	121,976	1,545,680
Dahomey.....	42,460	842,243
French Sudan.....	617,600	2,474,589
Upper Volta.....	154,400	2,974,142
Mauritania.....	347,400	261,746
Niger Territory.....	347,000	1,084,043
Total.....	1,800,565	12,283,962

There is a Governor-General over the whole of French West Africa, who maintains his seat at Dakar. Each colony has a Lieutenant-Governor at the head of its immediate administration. There is a general budget for the common interests of all the colonies. This budget in 1921 amounted to 64,604,240 francs. There is a military force of 18,000 men and a police force of 5,000 men.

Schools are relatively numerous; there being over 23,000 children who are receiving elementary instruction, of whom 3,000 are girls. The exports from these colonies are chiefly fruits, cotton, rubber, timber, cacao, oils and oil seeds. The chief imports are beverages, foodstuffs, implements, etc. Exports in 1920 were valued at 589,051,244 francs and the imports at 654,638,301 francs. The colonies have an aggregate railway

mileage of 1,658 and 12,000 miles of telegraph lines. There are 250 post offices. In the years immediately after the great war and in 1922 the French government made a great effort to increase the acreage of cotton in these colonies and as irrigation works are established success along this line is being achieved.

FREY, Emil, Swiss statesman: b. Arlesheim, Switzerland, 1838; d. there, 25 Dec. 1922. He represented Switzerland in Washington from 1882 to 1888, and was elected president of Switzerland in 1893. His mission to Washington was not his first visit to the United States, as he took an active part in the Civil War. While a captain in the 82d Illinois infantry, he was captured at Gettysburg, and sent to Libby prison where he was kept for six months. He was held as a hostage until President Lincoln consented to the exchange of a Captain Gordon, who had previously been sentenced to death. He had intended to spend the rest of his life in the United States in a business career, but his health had been so wrecked by the war that he returned to his home in Switzerland for a brief rest. Upon his departure from the United States he was breveted a major for bravery by President Johnson. He arrived in Basle during the election of officers of the canton. There was a dead-lock in the contest for secretary, and the mention of his name as a hero of the American war led to his immediate unanimous election to the office. As a result he never became an American business man. He served for 24 years as director of the International Cable and Telegraph Union and was one of the technical experts attached to the Swiss delegation at the Genoa Conference.

FRIENDS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

FRIENDS UNIVERSITY, a Friends co-educational institution, founded in 1898 and located at Wichita, Kan. In 1922-23 it has a faculty of 18 members, 295 students, property valued at \$825,000 including endowment and new pledges. The income is estimated at \$50,000. W. O. Mendenhall, Ph.D., is president.

FRUIT. See AGRICULTURE IN THE UNITED STATES; HORTICULTURE.

FUMASONI-BIONDI, Archbishop **Pietro**: Roman Catholic apostolic delegate to the United States: b. Rome, Italy, 4 Sept. 1872. He received his early education, as well as his theological education, in Rome. For several years after his ordination to the priesthood he was assigned to the Congregation of the Propaganda in a clerical capacity and also acted as private secretary to His Eminence Sebastian Cardinal Martinelli, who was apostolic delegate to the United States from 1896 to 1902. On 4 Nov. 1906 he was made titular archbishop of Dioclea and in 1916 was appointed apostolic delegate to India. In 1919 he was appointed apostolic delegate to Japan and here made a great reputation as an administrator and a diplomat in improving the relations between the Vatican and the Mikado. When Cardinal Laurenti was elected to the Sacred College, Archbishop Fumasoni was chosen to be his successor as secretary of the Sacred Congregation for the Propagation of the Faith in 1921. His duties included the post of consulor of the Sacred Congregation of Extraordinary

Ecclesiastical Affairs and of the Congregation for the Oriental Church. In November 1922 he was appointed apostolic delegate to the United States to succeed the former delegate Archbishop Bonzano, made cardinal.

FUR FARMS. About 500 fur farms, mainly for raising silver foxes, are established in the United States. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF; ENTOMOLOGY, UNITED STATES BUREAU OF.

Canadian Fur Farms.—While mink, raccoon, marten, skunk, beaver, muskrat, and karakul sheep are raised in small numbers, the principal animal raised on Canadian farms is the fox, which has been found more adaptable to domestication than any other wild animal and is also popular because of the high value of fox furs. In 1921 Canadian fur farmers realized \$1,270,000 on silver foxes alone. Contrary to the popular idea that fox furs come from the wilds of Canada, by far the greater number come from these fox farms. The entire number of fur farms in operation in Canada at the close of 1921 was 812, of which 775 were fox farms. Fifteen thousand animals were born on these farms in 1921, and 7,761 were killed for their pelts. The total amount received by the farmers for live animals and furs was \$1,498,105 in 1921 as compared with \$1,151,556 in 1920. Silver foxes sold numbered 2,920 and brought an average of \$289 each, the highest price registered being \$1,250 and the lowest \$75. Silver fox pelts sold at an average price of \$152 each. The value of animals remaining on the farms at the end of 1921 was placed at \$5,977,545, of which \$5,789,465 was in silver foxes.

FURMAN UNIVERSITY, a Baptist educational institution for men, founded in 1826 and located at Greenville, S. C. In 1922-23 it had a faculty of 21 members, 418 students, property valued at \$1,000,000 and an income of \$63,500. William Joseph McGlothlin, D.D., is president.

FURNACES, Electric. See METALLURGY.

FURNITURE INDUSTRY OF THE UNITED STATES. This industry, while not the largest manufacturing industry of the country is one of the most important, as it is a very important factor in the pleasure and happiness of the home. It has had a wonderful growth in the last 30 years from a total production in 1880 of \$75,000,000 to a production of \$575,000,000 in 1920. Until after the close of the Civil War the furniture factory, as we know of it to-day, was not to be found. Practically all the furniture produced in America previous to that time was made in small cabinet shops employing from one to six men and the most of the work was of necessity, hand work. The wood used at that time was very largely walnut and mahogany, of which we speak to-day as the most expensive woods we are able to obtain. As our population increased, the demand for furniture increased. To meet this demand and also to enable the manufacturers to reduce prices so as to satisfy the wants of all classes of people, modern machinery had to be obtained and cheaper woods had to be used. The laboring people of America used considerably more furniture than the laboring class of any other country. In most foreign countries the plebeian class use but very little furniture, while in

America, regardless of the home, furniture is in universal use. In a number of foreign countries the same small cabinet shop which was formerly so popular in this country may still be seen. For instance, all the furniture manufactured in Cuba is made in small cabinet shops. In Mexico there is not a modern furniture factory. There is, however, in that country one chair factory, which 20 years ago was a modern plant, and several small factories using a limited line of machinery and making rather a poor grade of furniture.

The designs used by the early cabinet makers in America were copied after the designs used in foreign countries and this copying of designs has been kept up until the present time. The colonial is the only design of furniture which may be spoken of as strictly American and there is but very little furniture of this design being produced to-day. The most popular design of furniture manufactured to-day is the Queen Anne and this design dates back to the reign of William and Mary. The Chippendale, the Italian Renaissance, the Sheraton, the Louis XV, the Louis XVI, the Empire, the Hipplewhite, and, in fact, every design being made to-day in the better classes of furniture is a modernized copy of the furniture made in the period, as indicated by the name, of the old designers. It is rather a reflection upon the furniture industry of our country that we have not developed designs which are strictly American, which would go down in history indicating the periods in which the designs came into prominence or the persons who brought the designs into prominence. There is, of course, a considerable amount of furniture produced that cannot be classed under any special design. Each factory producing this class of furniture usually produces it according to its own taste and in accordance with its own opinion as to what can be produced at the least cost to meet the demand for low-priced furniture.

While American manufacturers have always been copyists in designs, they have always produced, in the higher grades, as good furniture as is produced in the world. The construction of American furniture is better than that of any other country. The equipment to-day of the furniture factories of our country is better than that to be found in any other country and there is a constant effort being put forth by the American factory to utilize the advantages of its modern machinery for the betterment of the goods which it manufactures. A few articles of furniture are strictly American, such as the bureau, rocking chair, folding bed, chifforier, etc. Necessity has forced the American manufacturer to place these on the market to take care of the special needs of the American people.

The varieties of wood used in the manufacture of furniture have varied greatly. Early in the century walnut and mahogany were used very extensively; then maple, cherry and ash came into general use. About 1875 poplar began to be used for the cheaper grades of furniture. Oak came into general use about 1880 and it is in general use to-day, though for the past five years it has been losing its popularity. However, with our increasing population, the demand for furniture is becoming so great as to necessitate the use by factories of

lumber which can be obtained in large quantities. Hence, oak, having a wider range of growth than any other timber, the probabilities are that it will continue to be used in the manufacture of furniture for many years to come. Gum, the next most extensively grown timber, began to be used by the furniture manufacturers about 1910 and to-day nearly 60 per cent of the medium grade furniture is made of that wood, finished imitation walnut, the manufacturers having devised methods of curing and handling it which overcome the objectionable features that formerly made it unpopular. Gum, like oak, probably will be used for a great many years in the manufacture of furniture of the cheaper grades, for it and oak are the only suitable furniture woods growing in sufficient quantities to meet the increasing demand for furniture. Various finishes will be applied to these woods and the designs will change, but at the present time there does not seem to be any probability that either will be dispensed with for many years. Enameled furniture is coming into use each year and the demand is steadily increasing. The better class of furniture, which is veneered, is made and will continue to be made, as indicated above, of various kinds of wood, both domestic and imported. The finish applied to it, of course, is governed and will be governed by the demand. Outdoor furniture is being used more and more each year; maple and oak being the timber from which it is made. Rustic furniture, made from hickory, sassafras, willow, etc., is growing in popularity. Reed, rattan, and fibre furniture is now being used largely for porches, sun parlors and living rooms, fibre furniture being by far the most generally used. The breakfast room suite came into prominence about 1919 and to-day is being used extensively, not only in breakfast rooms, but in cottages, bungalows and apartments. Such furniture usually is finished in bright enamels with one or more colors and decorations.

In 1920 a concerted action was put forth by the furniture manufacturers and retail dealers of the country to create an increased demand for furniture and to educate the American people to the desirability of making the home more attractive. This movement has met with great success and with great favor in every section of the United States. "Better Homes Week" is being advocated by the larger newspapers and by the larger cities of our country. Advertising matter is furnished by the Better Homes Bureau, the expense being borne by the furniture dealers of the cities in which such advertising campaigns are put on. The principal object of the bureau is to educate the people to make their homes more attractive and to create a love for the home.

The largest producing centers of metal and upholstered furniture are the largest cities of the country. In the order of their importance from this standpoint they are: Chicago, New York, Philadelphia, Saint Louis and Cincinnati. The largest producing centers of furniture made from wood are, in the order of their importance: Grand Rapids, Mich.; High Point, N. C.; Jamestown, N. Y.; Rockford, Ill.; Evansville, Ind., and Gardner, Mass. For a number of

years, Grand Rapids has stood out very prominently as the furniture center of the United States, especially the center for fine furniture while High Point, N. C., for the last 15 years, has stood out very prominently as the center for cheap and medium grade furniture. For the last 15 years dealers have been insisting upon seeing and examining furniture before buying it because in no other way can they determine its real quality. So insistent has become this demand for a prepurchase examination that five distinct markets have been established, at each of which large buildings have been erected for the display of furniture. These centers are as follows: Grand Rapids, Mich.; Chicago, Ill.; New York City; Jamestown, N. Y.; High Point, N. C.

The exporting and importing of furniture from and to the United States is very limited. A small amount is exported to Cuba, Porto Rico, Mexico, South America and Canada but very little is being exported beyond the countries and islands adjoining the United States. The principal furniture imported is the bentwood chair from Austria and the number of these now being imported is very small. The most rapid strides in the furniture industry in the United States have been made in the last eight years. In 1914 there were 3,192 furniture establishments in the country with a production of \$265,705,763. In 1919, while the number of establishments had decreased to 3,154, the product was valued at \$571,356,333. It is safe to say that the year 1922 will show an increase in production over 1919 of about 18 per cent. Up to the present time it has been felt that the end to be attained did not warrant

STATE	Number of establishments	Capital invested	Value of products
New York.....	685	\$69,187,096	\$100,784,770
Michigan.....	171	53,725,259	69,497,237
Illinois.....	286	42,588,346	60,770,771
Indiana.....	177	33,004,712	52,350,282
Pennsylvania.....	335	30,433,891	42,343,850
Wisconsin.....	107	38,528,935	41,500,756
Ohio.....	162	25,896,058	35,224,313
North Carolina.....	109	16,737,450	30,288,761
Massachusetts.....	161	27,852,510	23,688,923
Missouri.....	86	10,116,269	16,154,865
California.....	176	8,753,677	13,639,927
New Jersey.....	78	9,446,814	10,750,870
Tennessee.....	50	8,297,284	9,793,221
Maryland.....	47	5,967,355	6,827,690
Minnesota.....	59	4,500,209	6,805,090
Texas.....	22	2,648,188	4,393,906
Kentucky.....	29	3,695,567	5,411,673
Georgia.....	37	3,236,108	5,108,528
Virginia.....	38	3,089,106	5,042,925
Iowa.....	36	2,563,686	3,457,059
Vermont.....	16	3,126,062	3,242,332
West Virginia.....	16	3,234,693	3,220,099
Arkansas.....	16	2,478,168	3,199,537
Oregon.....	23	2,979,542	3,182,718
Washington.....	59	2,093,086	2,776,615
Connecticut.....	33	2,245,500	2,564,191
New Hampshire.....	19	1,774,938	2,438,781
Louisiana.....	17	1,491,875	1,915,893
Kansas.....	20	960,936	1,365,009
Maine.....	10	1,521,646	1,288,635
Colorado.....	14	234,738	585,940
Rhode Island.....	13	282,540	370,199
Alabama.....	5	137,715	556,246
Nebraska.....	5	239,189	260,529
South Carolina.....	6	203,707	202,793
Oklahoma.....	7	79,742	170,405
Utah.....	6	48,605	142,213
Florida.....	3	52,847	98,289
District of Columbia.....	4	18,782	81,807
South Dakota.....	3	22,516	25,434
Idaho.....	3	6,509	21,528
All other States.....	7	480,719	575,184

the expenditure of time and money necessary to obtain the exact information relative to the production of furniture in the United States but the figures given above are as accurate as can be given under the circumstances. The States producing furniture are given in the order of their importance in the above table.

The figures given above include house furnishing goods such as comforts, piano covers, carpet-linings, mosquito canopies, portieres, draperies, furniture covers, serving trays, hassocks, pillows, carpet sweepers, quilts, etc., the value of which is about \$60,000,000. There is also a limited amount of furniture made in the smaller towns of the country and shipped to the larger cities in the white "knock-down" and this is listed as manufactured by the larger cities when it is only partially manufactured or rather assembled in them. It is impossible to obtain figures giving the exact amount of such furniture thus manufactured and shipped but the total would decrease the amounts by States as shown by but a very small amount. The next five years will see a greater tendency toward the buying of good furniture than in any period of the past. A desire has been created in the minds and hearts of the American people for better homes and this desire must be met by well-designed, well-manufactured, well-finished, honest furniture.

S. L. DAVIS,

Secretary, Treasurer and Manager, Southern Chair Company.

FURS. The centre of the world's fur trade is no longer London, having shifted across the Atlantic during the World War. Neither is it Saint Louis, which has been a gathering centre for furs and skins on the American continent for many years. It has moved to New York City, and seems likely to stay there, this being the market of the largest number of people who have the money to buy, and have also perhaps the greatest regard for fashions in furs. It is true that London still holds fur auctions, but the volume of trade is away below old-time figures, and the people who attend will not pay the prices that are easily had in New York. Saint Louis also has fur auctions, but they have dwindled so that the January, 1923, or "winter auction," was omitted, and Western buyers came to New York. Paris still holds place as a centre of design in garments, including fur garments and trimmings, but New York designers are equally successful, and make the styles in America quite as much as they are made in Paris. The total fur trade of the United States has to be partially estimated for 1922, but is close to \$75,000,000. As a whole the trade experienced marked prosperity. The official importations of furs and skins for the first nine months of the year were valued at \$46,430,357, as against \$28,675,884, during the same period of 1921. The other three months' importation is estimated at \$12,000,000, and the home production at \$16,500,000. It is believed that \$4,000,000 represents the increase in the value of dyed furs during the year, very many kinds of fur being dyed to imitate furs of higher

value. The caracal or Persian lynx was especially popular this last year, and over a 1,000,000 skins were sold in the American market against a bare 100,000 the year before. Muskrat furs sold to an even larger total, and marmot skins about half a million.

The fur-bearing animals of the United States have increased during recent years, owing to the wise policy of most of the States in passing closed-season laws, and development of fur farms as an industry. Still, the most of the furs in this market comes from abroad, in the raw state as skins. Canada sends us the most, some \$14,000,000 worth in 1922, followed by China, United Kingdom, Germany, Australia, France, Japan, Belgium, and the Argentine Republic. Dressed furs were brought in to the total of \$5,000,000 this last year, a gain of 28 per cent over 1921. The exports of furs from the United States totaled about \$25,000,000 in 1922, over 40 per cent going to the United Kingdom, 18 per cent to Canada, 13 per cent to Germany and 8 per cent to France.

The proportions in which the various raw furs come into the American market may be gathered from the following figures, taken from the announcement of the New York Auction Company's offerings in January, 1923: Number of skins — Muskrat, 270,400; Southern muskrat, 210,000; opossum, 175,400; Australian rabbit, 162,000 (lbs.); skunk, 143,700; mole, 143,000; squirrel, 109,000; fox, 80,000; raccoon, 63,000; marmot, 56,500; mink, 43,000; kid, 40,000, and so on in smaller quantities, the fewest being two mountain lion skins. It is very difficult to give an adequate idea of the prices of furs in the raw, variations being so great according to size and quality. January, 1923, prices, quoted in New York were: Skunk, 10c to \$1.45; mink, 10c to \$4.50; opossum, 3c to 65c; raccoon, 10c to \$1.65; black raccoon, \$3 to \$3.50; otter, \$6 to \$15; marten, \$2 to \$12; lynx, \$5 to \$10; wildcat, 8c to 80c; badger, 20c to \$1.50; wolverine, 25c to \$7; wolf, 50c to \$3.75; bear, 50c to \$8; black bear, \$13 to \$24, and cubs, \$3 up; fox, 50c to \$3; cross fox, \$5 to \$10; deer, 25c to \$4; black cat, 25c; house cat, 3c; mountain lion, \$1 to \$3.

Dyeing and substitution are a large part of the retail fur trade. How far it is carried on, only those in the business know with certainty. The census tells that in 1919 \$6,338,835 of fur materials were dressed into \$20,384,569 worth of finished furs, at wholesale valuation. Also that fur goods to the total of \$173,137,739, were made from \$105,596,605 of materials, these figures evidently being mainly of apparel fur-trimmed. Real sealskin is not as much in the market as it used to be, owing to the destruction of the Alaska herds. But government protection, in which the United States, Great Britain, Russia and Japan join, is resulting in the building up of the herd, which was reduced to about 132,000 animals in 1911. The policy of taking only surplus males over three years old, and of stopping open sea slaughter, is increasing the total, so that it is believed that by 1931, an average of 75,000 young males may be taken annually for fur.

G

GABUN. See FRENCH EQUATORIAL AFRICA.

GALICIA, formerly a province of Austria-Hungary lying to the south of Russian Poland, now a part of the Republic of Poland. It has a population of 8,257,505, of whom 3,731,569 are Roman Catholics, 3,379,613 Greek Catholics, and 871,895 Jews. The area of Galicia is 7,849,252 hectares, or about 19,000,000 acres. Petroleum and potassium salts are the chief products of the province. See POLAND.

GALLAUDET COLLEGE. See COLUMBIA INSTITUTION FOR THE DEAF.

GALLOWAY COLLEGE, a Methodist Episcopal, South, educational institution for women, founded in 1888 and located at Searcy, Ark. In 1922-23 it had a faculty of 24 members, 280 students, property valued at \$365,000 and an income of \$60,000. J. M. Williams is president.

GAMBIA, a British colony and protectorate at the mouth of the River Gambia in West Africa. It is administered by a governor assisted by an executive and a legislative council. The area of the colony proper is only four square miles. The protectorate has an area of 4,130 square miles and a population estimated at 240,000. Bathurst on the island of Saint Mary is the capital. There are eight government-aided schools, three are Roman Catholic, three Wesleyan, one Anglican, and one Mohammedan. The average attendance is 658 pupils. Imports in 1920 were valued at £2,711,880 and exports at £2,466,145. Revenue the same year amounted to £268,789 and expenditure to £171,160. There is no public debt. The chief imports are wearing apparel, boots and shoes, hardware, soap, wines, spirits and tobacco. The chief exports are hides, ground nuts, palm kernels and specie. There is a fortnightly mail service between Liverpool and Bathurst. The governor in 1922 was Capt. Cecil H. Armitage.

GANDHI, Mohandas Karamchand, Indian saint, politician and revolutionary: b. Probandar, near the industrial city of Ahmedabad, in the Presidency of Bombay, 2 Oct. 1869. His father was a man of independent temper from whom Gandhi inherited his spirit of "satyagraha" or adherence to truth. His early education was received in Ahmedabad, but after matriculation, he was sent to London to study law. He joined the Inner Temple and, in obedience to a promise made his mother, lived an austere life, not spending, it is said, more than \$5 a week. His recreation was a violin. In 1891, he was called to the bar and began to practice in Bombay. An important case required his presence in South Africa where he was immediately impressed with the humiliations, as he regarded them, which were heaped on Indian residents in that country. It was thus not with Britain herself but with a selfgoverning British dominion that Gandhi, as a vindicator of Oriental citizenship, first came into collision. South Africa no more wanted

Indian immigration than California wants the Japanese, and the Indians, here domiciled, were fingerprinted like criminals. With the humblest coolie, Gandhi went to prison for the rights and dignities of his race and he declined all preferential treatment. As between Britain and Boer, he was loyal to Britain.

The issue of race-equality in Africa spread to India whither, in due course, Gandhi returned. He settled in Ahmedabad and there lived as a Tolstoyan, taking up any grievance that was brought to him and accumulating around his person the reverence due to a Mahatma. In 1917, he was still loyal to the Government, with which he co-operated in the amelioration of agrarian grievances. The break came on 1 March 1919 when he issued his famous Passive Resistance or Salyagraha pledge in the following terms: "Being conscientiously of opinion that the Bill known as the Indian Criminal Law Amendment Bill No. 1 of 1919 and the Criminal Law Emergency Powers Bill No. 2 of 1919 are unjust, subversive of the principles of liberty and justice, and destructive of the elementary rights of an individual on which the safety of India as a whole and the State itself is based, we solemnly affirm that in the event of these Bills becoming law and until they are withdrawn, we shall refuse civilly to obey these laws and such other laws as the committee to be hereafter appointed may think fit and we further affirm that in the struggle we will faithfully follow truth and refrain from violence to life, person or property." Disclaiming all violence, Gandhi could not be said at this stage to have brought himself, even as a politician, within the grip of the law, but Mrs. Besant, whose sympathies were with the Nationalist movement, at once warned him that his action would release uncontrollable forces. The Rowlatt Acts were undoubtedly coercive and so calculated to inflame resentment. It is an ironic comment on them that they were not enforced. As propaganda, they did the maximum of harm to the British influence, yet were not, in fact, needed to sustain British authority.

In many respects, Gandhi's message was helpful to India. He proclaimed the dignity of man. He discounted the value of a merely material prosperity. He denounced caste and religious animosities. He was the first great teacher to bring Hindu and Moslem, for a time, into the same camp. But, to his personality, there was another side. All that he said against Western civilization was not true. His appeals were often to superstition. His reported miracles were a myth. And, in particular, his lack of sympathy with hospitals and other manifest benefits which the West had brought to India, was merely perverse. His mild words were translated by Hindus into ferocious placards, demanding the extermination of whites, men and women, and in April, 1919, disturbances in Amritsar led to grave and much resented reprisals by the British.

Moreover, events soon proved that Hindu-Moslem unity was only superficial. There was no real common factor between a gospel of non-resistance as preached by Gandhi and the religion of force, inflicted on Armenians by Turkey and — what touched India more closely — by fanatical Moplahs on the helpless and terror-stricken Hindus in their neighborhood. The Khilafat movement did not mean toleration. It was a demand for ultimate Mohammedan supremacy. As perplexities gathered around him, Gandhi's tone hardened. There were proclaimed *hartals* or periods of national mourning when all work ceased; schools, were to be boycotted; the new scheme of Indian Home Rule was to be killed by nonco-operation; a welcome must be refused the Prince of Wales; only *Swadeshi* goods must be used; for cotton goods, imported from Lancashire, handspun cloth must be substituted. The spinning wheel became the symbol of India's regeneration. The whole programme was vaguely summed up in the word *swaraj* which Gandhi was careful not too particularly to define.

In September, 1920, Gandhi carried the Indian National Congress for nonco-operation. He held out hopes which meant to his followers that within a year the British would be out of India. September, 1921 came and the prophecy was unfulfilled. It was extended to October — to December — then indefinitely. With that miscalculation, Gandhi's magic was shattered. On the one hand, non-resistance had disappointed those who believed in it. On the other hand, its failure brought the country face to face with a choice between civil war and an attempt to work out peaceful reforms. Responsible Indian opinion was not prepared to seek a solution in war. In May, 1921, there were several interviews between Gandhi and the Viceroy, Lord Reading. As a result, the Ali Brothers, who had led the Khilafat movement, apologised for their violent language. They were, however, arrested later for a similar offence, and it began to be clear that Gandhi himself was being driven by circumstances into association with the extremists who believe in physical force. On 10 March, 1922, he was arrested. There was no doubt that his writings had been seditious. As a lawyer, he knew it and pleaded guilty, even asking that the highest sentence be imposed upon him. He was sentenced to six years imprisonment but with the provision that, if politics permitted, there would be an earlier release. The disappearance of Gandhi was accepted by India with calm, in which there was an element of relief. He and his followers did not mean the same thing. The Hindus were not prepared, in practice, to surrender caste. The Moslems remained Moslems.

Word pictures of Gandhi are numerous and, from the western standpoint, not always flattering. Spare of figure, he sits, partially clad in *khaddar* or homespun, with a blanket thrown around him. His iron-gray hair is strong and close-clipped. He wears a moustache. His teeth are ill-kept; his eyes, dark and restless. Around him are gathered his worshippers, men and women. He is often silent. His English, when he speaks, is however perfect and no man living is better informed on modern literature. He

has been called "the Christ of India" and Rabindranath Tagore, the Indian poet, has hailed him as India's greatest man. Others will see a nearer parallel to him in Savonarola, the Florentine monk who also tried to reconcile statesmanship with spirituality. His imprisonment is hardly regarded as a martyrdom. Its rigors merely continue without accentuating Gandhi's own asceticism. And it has relieved him of a dilemma of which no one was more conscious than he himself when, on the eve of his arrest, which virtually he invited, he censured his followers for the Chauri Chaura riots.

PHILIP WHITWELL WILSON.

GARVIN, Lucius Fayette Clark, American physician and ex-governor: b. Knoxville, Tenn., 13 Nov. 1841; d. Lonsdale, R. I., 2 Oct. 1922. He was educated at the Newgarden Friends School at Greensboro, N. C., and at Amherst College, receiving the degree of A.B. in 1862. He was graduated at the Harvard Medical School in 1867, and practised in Pawtucket, R. I., before removing to Lonsdale. During the Civil War he served with the 51st Massachusetts regiment. He was elected to the Rhode Island legislature 16 times from 1883, and was the Democratic candidate for Congress in 1894, 1896, 1898, 1900 and 1906 from the second Rhode Island district. He was elected governor of Rhode Island in 1902 and became nationally known through his advocacy of labor legislation, including the nine-hour day. As a physician he was widely known throughout the State, and in all his years of practice Doctor Garvin had never owned a carriage or automobile, doing all his travelling by bicycle. In 1920 he was elected State senator. He advocated proportional representation, single tax, and also the constitutional initiative as a means to those ends.

GAS MACHINES AND GAS AND WATER METERS.

Manufacture of. Reports to the United States Census Bureau, made public in December 1922, show a considerable decrease between 1919 and 1921 in the activities of the establishments engaged primarily in the manufacture of gas machines and gas and water meters in this country. The total value of products reported for 1921 was \$21,956,000 as compared with \$26,267,000, reported for 1919, a decrease of 16.4 per cent. The figures for 1921 do not include establishments reporting products valued at less than \$5,000 each. The decrease in production was accompanied by decreases in the number of persons employed, in the total amount paid during the year in salaries and wages, in the amount expended for materials and by a large decrease in the number of establishments engaged in the industry. The average number of wage earners employed in this business in 1921 was 4,282, compared with 5,589 in 1919. Salary and wage payments amounted to \$7,434,000 in 1921 as against \$8,752,000 in 1919. In 1921 materials cost \$9,000,000; in 1919, \$10,647,000. There were 65 establishments engaged in the industry in 1921 as compared with 105 in 1919. The decrease, the Census Bureau's report states, was due in part to the fact that a number of the 1919 reporting concerns were out of business in 1921 while others had so changed

the character of their operations as to require classification in some other industry—that is gas machines and gas and water meters were no longer the products of chief value. Of the 65 establishments reporting products of over \$5,000 for 1921, 13 were located in Illinois; 9 each in New York and Pennsylvania; 7 in Ohio; 5 each in Indiana and New Jersey; 3 each in Massachusetts and Michigan; 2 each in Kansas, Maryland and Minnesota; and 1 each in Connecticut, Missouri, Oklahoma, Rhode Island and Wisconsin.

GATES, Merrill Edwards, American educator, lecturer and author: b. Warsaw, N. Y., 6 April 1848; d. Bethlehem, N. H., 17 Aug. 1922. His father was Seth M. Gates, member of Congress and anti-slavery leader. He received the degree of A.B. from the University of Rochester in 1870 and the degree of A.M. in 1873; the degree of Ph.D. from the University of the State of New York in 1880; that of LL.D. from Princeton and Rochester in 1882; from Columbia 1891 and from Williams College in 1893; and the degree of L.H.D. from Columbia in 1887. From 1870 to 1882 he was principal of the Albany Boys' Academy, and from 1882 to 1890 he was president of Rutgers College, leaving in 1890 to accept the presidency of Amherst College, where he remained nine years. He became a member of the United States Board of Indian Commissioners in 1884, and was its chairman from 1890 to 1899 and secretary from 1899 to 1912. A licensed preacher of the Congregational Church from 1899, he was active in State and national church affairs. He was president of the American Missionary Association (1892-98); president of the Lake Mohonk Indian Conference for eight years; member of the international committee of the Young Men's Christian Association (1882-1902); vice-president of the American Bible Society and of the American Tract Society, and a member of the American Philosophy Society, and of the Academy of Political Science. He was the author of: 'Land and Law as Agents in Educating the Indians' (1885); 'Sidney Lanier, Poet and Artist' (1887); 'International Arbitration' (1897); 'Highest Use of Wealth' (1901); 'Introduction to Pocket Edition of the Constitution of the United States' (1920).

GEMS AND PRECIOUS STONES. The value of the precious stones produced in the United States in 1921 was as follows: Andalusite, \$10; beryl, \$1,090; chlorastrolite, \$100; copper-ore gems, \$8,775; corundum (sapphire), \$482,745; feldspar, \$155; fossil coral, \$200; garnet, \$606; jet, \$460; obsidian, \$67; opal, \$336; quartz, \$11,114; rhodonite, \$275; thomsonite, \$10; tourmaline, \$1,450; turquoise, \$6,272; variscite, \$560. The value of the precious stones produced in the United States by States in 1921 was as follows: Montana, \$489,021; Arizona, \$8,805; Nevada, \$5,538; Colorado, \$3,848; other States, \$11,068; total, \$518,280.

The gems and precious stones imported and entered for consumption in the United States in 1917-21 were as follows: Pearls a non-mineral product are added in a separate column.

YEAR	Diamonds			
	Glazier's	Dust and bort	Rough or uncut	Cut but not set
1917.....	\$1,098,102	\$349,746	\$13,092,855	\$18,421,838
1918.....	718,397	475,870	12,636,024	7,734,150
1919.....	984,381	1,420,442	20,306,758	64,085,610
1920.....	1,527,753	3,387,488	10,526,125	45,240,013
1921.....	435,872	466,345	2,207,365	26,144,323

YEAR	Other stones not set	Total excluding	Pearls
1917.....	\$1,883,810	\$34,846,351	\$4,947,509
1918.....	1,102,398	22,666,839	765,929
1919.....	5,161,639	91,958,830	11,008,973
1920.....	5,419,363	66,100,742	7,879,384
1921.....	2,778,931	32,032,836	4,492,063

GENEVA COLLEGE, a Reformed Presbyterian co-educational institution, founded in 1840 and located at Beaver Falls, Pa. In 1922-23 it had a faculty of 16 members (6 instructors), 1,050 students (including summer 1922), property valued at \$676,763, and an income of \$84,064.56. Archibald A. Johnston, A.M., B.D., is president.

GENOA CONFERENCE. See PEACE AND ARBITRATION, INTERNATIONAL; also REPARATIONS.

GEOGRAPHICAL SOCIETY, American. This organization was established in 1852 and occupies a handsome building in New York City at Broadway and 156th Street. Its activities lie primarily in the field of research and publication. In the course of 1922 notable progress was made in the prosecution of this work. The Society's outstanding publication of general interest is a quarterly, *The Geographical Review*, which has appeared regularly. Of more special interest are the volumes of the 'Research Series,' scientific monographs on a wide range of geographical subjects. Of these, three were published in 1922; a study of the legendary islands of the Atlantic as described and depicted on maps in the middle ages, a catalogue of geological maps of South America, and a determination, by a new method based upon the examination of clay deposits, of the duration of the recession of the last ice sheet in New England.

A department of the staff of the Society is devoted especially to carrying out a program of research in the geography of Hispanic America, the results of which are appearing in a series of maps and publications. The fundamental map, when finished, will be represented by some 100 sheets on a scale of 1:1,000,000 conforming in general to the 'International Millionth Map' of the world. Compiled critically from the examination of a wide range of sources, this map will serve as a base for regional studies; in 1922 the La Paz sheet was published; work upon several others was started and has made notable progress. It is expected that four sheets will be

completed in 1923. Handbooks on the geography of the area covered will accompany each sheet; that for the La Paz sheet, which bears the title 'Geography of the Central Andes' appeared at the close of the year. Another essential feature of the Society's activity is the maintenance of a geographical library and collection of maps, among the most complete in the United States. Their function is to serve the members of the staff of the Society in the work of research and editing and to provide a center where serious students of geography may carry on their studies. Notable additions were made to these collections during the year 1922.

In its elections to honorary and corresponding membership and in its presentations of medals, the Society has long made a practise of recognizing contributions to the advancement of geography. Three honorary and 15 corresponding members were elected in 1922. On 19 July 1922, the Charles P. Daly gold medal was presented by Ambassador Harvey at the American Embassy in London to Lieut-Col. Sir Francis Younghusband, president of the Royal Geographical Society, "for explorations in northern India and Tibet and for geographical publications on Asiatic and African borders of the Empire."

The officers of the Society for 1922 include the following: president, John Greenough; vice-presidents, James B. Ford, Philip W. Henry, Alexander Hamilton Rice, M.D.; foreign corresponding secretary, Prof. William Libbey; domestic corresponding secretary, W. Redmond Cross; recording secretary, Hamilton Fish Kean; treasurer, Henry Parish; director and editor, Isaiah Bowman, Ph.D.

GEOGRAPHIC SOCIETY, National, an educational organization founded for the increase and diffusion of geographical knowledge, with headquarters at Washington, D. C. It concentrated its activities in the field of exploration during 1922 in the Chaco Canyon (New Mexico) region, where its expedition, under the leadership of Neil M. Judd, of the National Museum, pursued its work of excavation in the Pueblo Bonito ruins—the mysterious communal settlement, which, when its riddles are read, it is believed will throw illuminating light on the history of pre-Columbian America. The Society will continue its investigations during the summer of 1923. The Society's notable achievements in the exploration and study of the Mount Katmai volcanic region, in Alaska, were consummated in December 1922, with the publication of 'The Valley of Ten Thousand Smokes,' a richly illustrated volume, giving a fascinatingly human account of the Society's five expeditions to this region, and at the same time supplying exact scientific data on the greatest volcanic explosion of modern times, and of the valley in the vicinity of Mount Katmai, where millions of fissures belching forth superheated steam and gases have caused it to be termed the "Eighth Wonder of the World." In addition to this volume by Dr. Robert F. Griggs, leader of the Society's expeditions, the first two of a series of important memoirs, dealing with the purely scientific findings of the expeditions, were published in 1922. They are entitled 'The Origin and Mode of Emplacement of the Great Tuff

Deposit of the Valley of Ten Thousand Smokes' and 'A Chemical Study of the Fumaroles of the Katmai Region'—the first by Clarence N. Fenner and the second by E. T. Allen and E. G. Zies, all of the geophysical laboratory of the Carnegie Institution, who accompanied the Society's 1919 expedition. Photographic surveys were made during the year by staff photographers of the Society in Italy, Portugal, Mexico, Wales, Holland, Spain, Norway, Sweden, Denmark, Germany, Hungary, and several sections of the United States. After consultation with General Pershing and the French government, it has been decided that the \$10,000 remaining in the society's war relief fund shall be expended in providing a model water supply system to Cantigny, France, to replace that destroyed in the World War. This is in the nature of a gift as a memorial to the American soldiers who fought for the first time as a unit in the World War at Cantigny. This gift recalls the fact that the Society not long ago granted \$25,000, and, in addition, \$75,000 was given by individual members, through the Society, to the Federal government, when the congressional appropriation for the purchase was insufficient, and the finest of the giant Sequoia trees of California were thereby saved for the American people, and incorporated into a national park. On 6 April 1922, the thirteenth anniversary of the discovery of the North Pole, the Society unveiled a monument over the grave of Rear Admiral Robert E. Peary, in Arlington National Cemetery. The Society's chief contribution in promoting the diffusion of geographic knowledge was carried on during 1922 by the monthly distribution of the *National Geographic Magazine* to its 750,000 members. It followed its map program of 1921, when large scale new maps of Europe, Asia, South America and the islands of the Pacific were issued as supplements with its magazine, by the issuance, in 1922, of maps of the countries of the Caribbean, of Africa, and of the world. In addition to the distribution of its official organ—*The Magazine*—the Society, during the past year, furnished to more than 500 of the leading daily newspapers in America a daily geographic news bulletin—each devoted to some topic or place of immediate news interest. The bulletin service, established at the beginning of the World War, has been carried on for eight years without service charge to the press. More recently, the Society established, along the same lines, a school service bulletin for teachers in public schools. These bulletins, containing geographic material of present-day interest in the schoolroom, are so written and illustrated as to be highly attractive to children. The Society also participated, through financial support, in an expedition to the islands off the west coast of Lower California, and in the improvement of roads and trails in Mount McKinley National Park.

Officers.—Dr. Gilbert Grosvenor, president and editor-in-chief; Henry White, vice-president; John Joy Edson, treasurer; John Oliver LaGorce, associate editor; O. P. Austin, secretary; George W. Hutchison, associate secretary; William Joseph Showalter, assistant editor; Ralph A. Graves, assistant editor.

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GILBERT GROSVENOR,
President.

GEORGE, Sir Ernest, English architect: b. London, 13 June 1839; d. Kensington, London, 8 Dec. 1922. He was educated at Brighton and Reading, was articled to S. Hewitt and entered the Royal Academy Schools, where he took the gold medal for architecture in 1859. Two years later he began practice with Thomas Vaughan. After Vaughan's death he was joined by Harold Peto, and on Peto's retirement by A. B. Yeates. In 1896 he was given the queen's gold medal of the Royal Institute of British Architects. In 1908-09 he was president of the Royal Institute of British Architects and in 1910 was made an associate of the Royal Academy. In 1911 he was knighted and in 1917, in his 78th year, he was elected a full member of the Royal Academy. The greater part of his work consists of country mansions, some of them new and some of them remodelled. His chief works lie in Southern and Western England. He restored Berkeley Castle, Gloucestershire, and improved and partly rebuilt Welbeck Abbey after a bad fire. His houses are notably in harmony with their surroundings. They include: Rousden, Devonshire; Stoodleigh Court, Devonshire; Motcombe, Dorset; Batsford, Gloucestershire; Edgeworth Manor, Gloucestershire; Monk Frys-ton, Yorkshire; Poles, Herts; North Minns, Herts; Buchan Hill, Sussex; Dunley Hill, Surrey; Eynsham Hall, Oxford; Sedgwick Park, Sussex; Ruckley Grange, Salop; Foxcombe, Oxford; Busbridge Park, Surrey; and Crathorne Hall, Yorkshire. In London he not only built single houses, but whole streets; Harrington Gardens and Collingham Gardens, of brick and terra cotta, follow the style of Flemish country-houses of the 16th and 17th centuries. A north Italian Renaissance house was built in Berkeley Square for the late Mr. Salting. The shop, No. 36 Piccadilly, built for the bookseller, Sotheran, and a large building at the corner of Piccadilly and Albermarle Street, once known as the Albermarle Hotel, are his. In the city of London the Royal Exchange buildings are by him, and in Marylebone, the Royal Academy of Music. He was also architect for the Crematorium at Golders Green. Sir Ernest designed four churches only: one at Streatham; Saint Pancras at Rousden, Devonshire; and two English churches in the Engadine at Samaden and Tarasp. He built the Shirpur palace in India and a villa at Antibes, France. Sir Ernest was an accomplished etcher and published 'Etchings on the Loire'; 'Etchings in Belgium'; 'Etchings'; and 'Etchings in Venice.'

GEORGETOWN COLLEGE, a Baptist co-educational institution, founded in 1829 and

located at Georgetown, Ky. In 1922-23 it had a faculty of 24 members, 343 students (1st semester), property valued at \$232,700, and an estimated income of \$100,000. Maldon Browning Adams, D.D., LL.D., is president.

GEORGETOWN UNIVERSITY (legal title, "The President and Directors of Georgetown College in the District of Columbia"), a Roman Catholic educational institution for men, founded in 1789 and located at Washington, D. C. In 1922-23 it had a faculty of 226 members, and 2,626 students. Figures relating to value of property and income not available for publication. John B. Creeden, S.J., Ph.D., D.D., is president.

GEORGE WASHINGTON UNIVERSITY, a non-sectarian co-educational institution, founded in 1821 and located at Washington, D. C. In 1922-23 it had a faculty of 280 members, about 4,800 students, property valued at \$1,500,000, and an income of \$540,000. Howard L. Hodgkins, Ph.D., Sc.D., is president.

GEORGIA, a South Atlantic State of the United States, bounded on the north by Tennessee, North Carolina and South Carolina, on the east by the Atlantic Ocean, on the south by Florida and the west by Alabama. The area of the State is 59,265 square miles, which makes it the 20th State in order of size. In 1920, it ranked 12th in population with 2,895,832. Of this population 1,689,467 were whites, 1,206,365 negroes, 228 Asiatics and 125 Indians. In the same year there were in the State 16,186 foreign-born, of whom 1,936 were Germans, 1,593 English, 3,452 Russian and 1,112 Irish. The chief cities of the State are Atlanta, the capital, with a population of 200,600; Savannah, 83,252; Macon, 52,995; Augusta, 52,548, and Columbus, 31,125.

Religion.—The chief denominations are Baptists (721,140) and Methodists (387,775), the former having more than half of the entire religious membership of the State. There are 25,181 Presbyterians, 18,214 Roman Catholics and 11,098 Episcopalians.

Education.—Primary education is free and compulsory. There are in the State 8,359 primary schools with 16,409 teachers and 723,077 pupils; 132 high schools with 1,499 teachers and 47,860 pupils; three normal schools with 126 teachers and 2,514 students. In 1922, the State appropriation for common schools was \$4,250,000. For higher education the State maintains the University of Georgia at Athens, the Georgia School of Technology and the North Georgia Agricultural College.

Agriculture.—There are in the State 310,732 farms with an aggregate acreage of 25,437,072 acres, of which 13,154,010 acres are improved land. The total value of all farm property in 1920 was \$1,356,904,896. Negroes operate 41 per cent of the farms of the State, but of this 41 per cent, 86 per cent are rented farms. Cotton is the chief crop raised by the negro farmers. Cereals are important crops in the northern part of the State. Of late years sugarcane planting has been increasing. The chief crops, with their acreage, yield and value, for the year 1922 are: corn, 4,385,000 acres, 52,620,000 bushels, \$45,253,000; winter wheat, 190,000 acres, 1,520,-

000 bushels, \$2,280,000; oats, 474,000 acres, 8,532,000 bushels, \$6,399,000; rye, 18,000 acres, 171,000 bushels, \$231,000; tame hay, 728,000 acres, 670,000 tons, \$11,390,000; sorghum syrup, 30,000 acres, 2,490,000 gallons, \$1,370,000; rice, 3,000 acres, 72,000 bushels, \$84,000; potatoes, 25,000 acres, 1,700,000 bushels, \$2,380,000; sweet potatoes, 152,000 acres, 12,616,000 bushels, \$7,696,000; cotton, 3,466,000 acres, 725,000 bales, \$86,638,000; tobacco, 11,000 acres, 5,940,000 pounds, \$1,544,000; peanuts, 160,000 acres, 96,320,000 pounds, \$4,527,000; apples, 1,135,000 bushels; peaches, 4,900,000 bushels, and pears, 202,000 bushels. On 1 Jan. 1923, the live stock count of the United States Department of Agriculture showed on Georgia farms 95,000 horses, valued at \$7,885,000; 390,000 mules, valued at \$40,950,000; 509,000 milk cows, valued at \$14,252,000; 700,000 other cattle, valued at \$7,700,000; 66,000 sheep, valued at \$198,000, and 2,152,000 hogs, valued at \$16,786,000. The value of the fruit crop of 1922 was \$8,000,000. The watermelon crop netted \$1,800,000 to the growers and the canteloupe crop amounted to \$500,000.

Other Products.—Oyster and shad fishing are of some importance. The mineral resources of the State include gold, silver, coal, iron, manganese, bauxite and graphite, lime, ochre, natural cement, talc and soap stone, marble and mineral waters.

Manufacturing.—There are in the State 4,639 manufacturing establishments with an aggregate capital of \$258,325,811, and employing 118,000 hands. In 1920, the value of the industrial output of the State was \$693,237,000. The chief manufactured product is cotton, followed by oil and cake from cotton seed. The cotton mills of Georgia operate over 2,000,000 spindles. The percentage of child labor in Atlanta in 1920 was 17.2 per cent.

Transportation.—The transportation system of the State is highly developed. There are several rail lines traversing the State and Savannah is an ocean port, accommodating vessels up to 32 feet draft. The total railroad mileage is 7,326, and there are in addition 491 miles of electric railways.

Forest Products.—The lumbering industry furnishes about 500,000,000 board feet annually. By far the greater part of this cut is the celebrated Georgia pine.

Finances.—At the beginning of the fiscal year, 1922-23, the State had a balance in hand of \$1,727,866.35. During the fiscal year receipts aggregated \$12,889,801.22. Disbursements for the same period aggregated \$12,984,534.82, leaving a balance on hand at the beginning of the fiscal year, 1923-24, of \$1,633,132.75. The estimated expenditures of the fiscal year, 1923-24, amount to \$12,889,801.22. The bonded debt of the State on 31 Dec. 1922 was \$5,485,202. The assessed value of real property was \$719,868,211; of personal property, \$307,926,510.

Government.—The legislative power is vested in the General Assembly of two chambers—a senate of 51 members and a house of representatives of 193 members. The members of both houses are elected for two years. The legislature meets annually on the fourth Wednesday in June and its sessions are limited to 50 days. The State sends two senators and 12

representatives to the Federal Congress. The governor in 1922 was Hon. Thomas W. Hardwick, who was elected for the term 1 July 1921 to 30 June 1923. The secretary of state is S. G. McLendon; attorney general, George M. Napier; comptroller, W. A. Wright; treasurer, W. J. Speer; superintendent of education, M. M. Parks; assistant treasurer, J. O. Anderson.

Judiciary.—Members of Supreme Court: S. C. Atkinson, M. W. Beck, James K. Hines, S. P. Gilbert, H. W. Hill and R. B. Russell. Members of court of appeals: N. R. Broyles, W. F. Jenkins, R. A. Bell, O. H. B. Bloodworth, A. W. Stephens and Roscoe Luke.

GEORGIA (Sakartvelo), a republic formerly a part of the Russian empire, situated in Transcaucasia between the Black and Caspian seas. The area of the republic is 74,577 square miles with a population of 3,053,345. The chief towns with their populations are: Tiflis, the capital, 346,766; Kutais, 85,151; Sukhum, 61,974; and Poti, 20,731. The population is made up of the following tribal groups: Georgians proper, Mingrelians, Osietines, Abhasians, Hevsurs, and Emertines. Elementary education is in charge of the rural and municipal councils under the general supervision of the ministry of education, the secondary schools are controlled directly by the ministry and higher education is provided for by the University of Tiflis, which has 50 professors and 1,500 students. The Georgian language relegated to peasant use under the Russian regime has been declared the official language of the republic. Agriculture is the chief occupation of the inhabitants, about 90 per cent being engaged in its pursuit. Corn is the principal crop. Wine is made in large quantities and fruit growing, bee-keeping and sericulture are flourishing. Cattle raising is also an important industry, the country being well adapted thereto. Of the minerals the chief product is manganese. Copper, iron, coal and lead are found but are not worked to any great extent. In the last year for which there are official statistics the exports of Georgia were valued at 257,559,000 roubles and the imports at 366,897,167 roubles. There are 970 miles of railways, the main line being from Batum through Tiflis to Baku on the Caspian. There are several narrow gauge lines connecting up the mining districts with the main line. All lines in the territory of the republic are the property of the state. At present the country is governed by a revolutionary committee after the manner of Soviet Russia.

GEORGIA SCHOOL OF TECHNOLOGY, a State educational institution for men, founded in 1888 and located at Atlanta, Ga. In 1922-23 it had a faculty of 120 members, 3,035 students, property valued at \$1,250,000 and an income of \$367,000. Marion Luther Brittain, A.B., LL.D., is president.

GEORGIA, University of, State co-educational institution, chartered in 1784, opened in 1801 and located at Athens, Ga. In 1922-23 it had a faculty of 93 members, 1,436 students, property valued at \$3,000,000, and an income of about \$300,000. David C. Barrow, LL.D., is chancellor.

GERMAN COLONIES. The overseas possessions of the former German Empire had a total area of 1,140,117 square miles and a population estimated at \$13,258,000. In Africa, Germany ruled German East Africa, German Southwest Africa, Cameroon, Togoland; in the Pacific, the colonies of Germany included New Guinea, the Bismarck Archipelago, the Caroline Islands, German Solomon Islands, Marshall Islands, the Pelew Islands, the Ladrone Islands, Nauru and German Samoa. On the Asiatic mainland, Germany held Kiaochow. Under the terms of the Treaty of Versailles these colonies were turned over to the principal Allied and Associated powers under mandates. Great Britain received most of the African colonies, the rest being mandated to France and Belgium. The Pacific island colonies were placed under mandate to Australia, New Zealand and Japan. See articles on the several former colonies.

GERMAN EAST AFRICA. See TANGANYIKA TERRITORY.

GERMAN LANGUAGE. See PHILOLOGY.

GERMAN LITERATURE. See LITERATURE.

GERMAN NEW GUINEA, the name of former territories of Germany in the western Pacific and including Kaiser Wilhelm's Land, the Bismarck Archipelago, the German Solomon Islands, the Caroline Islands, the Marshall Islands, the Ladrone Islands and the small island of Nauru. These islands were occupied by Australian forces in 1914 and after the war the islands north of the Equator—the Marshalls, Caroline, Pelew, and Ladrone—were placed under mandate to Japan, while those to the south of the equator—the Bismarck Archipelago, German Solomon Islands, German New Guinea, were assigned to Australia. German Samoa was assigned to New Zealand, Nauru was assigned to the British Empire. The territory now called the Territory of New Guinea, under mandate to Australia, is divided into 10 administrative districts. New Guinea proper, or Kaiser Wilhelm's Land, is dealt with in this volume under its own head. Bismarck Archipelago comprises the islands, New Pommern, now called New Britain, area, 10,000 square miles; New Ireland, the former Neu Mecklenburg, area, 4,600 square miles; the Duke of York Islands, formerly Neu Hannover and Neu Lauenburg, 530 and 22 square miles respectively; and the Admiralty Islands, area 600 square miles. Lesser island groups of this archipelago are the Gardner Islands, Fead Islands, the French Islands, Rook Islands, Commerson Islands, Anchorite Islands, Abgarris Islands, Nissan and Saint Matthias Islands. The native population of the Archipelago is estimated at 188,000, of whom 50,000 dwell on the island of New Britain; 28,000 on New Ireland. The Solomon Islands have an area of about 4,000 square miles and a population of 18,000. In 1920-21 the import duties amounted to £61,697 and the export duties to £31,736. The chief exports that year were copra, shell, birds of paradise, and cocoa. The value of the exports was £673,992 and the value of the imports the same year was £661,441. Imports consisted chiefly of groceries, hardware, tobacco, boots and shoes,

oils and wines, spirits and beer. See also NEW GUINEA.

GERMANO-RUSSIAN TREATY. See PEACE AND ARBITRATION, INTERNATIONAL; REPARATIONS.

GERMAN SAMOA. See SAMOA, WESTERN, TERRITORY OF.

GERMAN SOUTHWEST AFRICA. See SOUTHWEST AFRICA.

GERMANY, or THE GERMAN REPUBLIC (still officially *Deutsches Reich*). On 9 Nov. 1918 Emperor William II abdicated and took up his residence in Holland. The government was taken over by the council of people's commissioners in Berlin; the reigning princes of the component states either abdicated or were deposed; the provisional authorities declared the Imperial Parliament dissolved, and arrangements were begun for establishing the republic. A national assembly, chosen at elections held in January 1919 at which the suffrage was extended to all German men and women over 20 years of age, consisted of 423 members (165 Majority Socialists, 90 Clericals, 75 Democrats, 42 Conservatives, 22 Independent Socialists, an equal number belonging to the German People's party, and 7 representatives of minor parties). It met at Weimar on 6 February; five days later Friedrich Ebert was chosen as the first president; and on 31 July the assembly adopted a constitution which was promulgated 11 August and under which, 21 August, President Ebert was formally installed.

Constitution.—Provisions of that document are: The commonwealth is a republic and the power of the state is derived from the people; all Germans are equal before the law; men and women have fundamentally the same civil rights and duties; public advantages or disadvantages of birth or rank are suspended; titles of nobility shall be accepted only as part of a name and are not to be conferred in future, and other titles, academic degrees excepted, may be conferred only when they designate an office or profession; orders and their insignia may not be conferred by the state and no citizen shall accept a title or order from a foreign government; no state church is recognized; religious freedom, freedom of speech and of the press are guaranteed; all citizens, women as well as men, over 20 years of age have the right of equal suffrage; the government, though accepting the principles of the law of nations as binding upon Germany, shall have the exclusive right of legislation in regard to foreign relations, colonial matters, state property, immigration and emigration, extradition, military organization, coinage, customs, posts, telegraphs and telephones; the national government has similar legislative control in the fields of civil and criminal law, poor laws, judicial proceedings, passports, health, labor, industrial pursuits, insurance, mining, weights and measures, highways, theatres, navigation, railways, taxes and other sources of income in so far as they may be claimed for its purposes; every component state is required to have a republican constitution and its officials must be chosen by universal, equal, direct and secret vote of all citizens; both men and women, on the basis of proportional representation; laws of

the national government transcend those of the component states, but in so far as the central government makes no use of its right of legislation the confederated states are permitted to legislate for themselves, except as to matters reserved for the central government's exclusive legislation. There are two legislative bodies: the Reichstag and the Reichsrat. The former chooses its own president and secretary. Its delegates serve for four years, and are chosen, on the basis of proportional representation, by universal, equal, direct and secret vote of all German men and women over 20 years of age. The elections must be held either on a Sunday or other day of public rest. This body, in 1922, had 469 members, divided as follows: Majority Socialists, 108; Independent Socialists, 61; Centre (Clerical) party, 72; German National People's party, 71; German People's party, 65; German Democratic party, 40; the Bavarian People's party, 20; other parties, 7. Projects of legislation must be introduced by the government (with the Reichsrat's assent), or by the Reichstag. The Reichsrat may veto measures approved by the Reichstag. The principle of referendum is provided for. The president of the republic is to be chosen by direct vote as described above; the term of office is seven years, and to be eligible a candidate must have completed his 35th year. An incumbent is eligible for re-election. The president may be deposed by a referendum requested by a two-thirds majority of the Reichstag.

The president is authorized to conclude, subject to the Reichstag's approval, alliances and treaties with foreign powers. He receives and appoints ambassadors, is supreme commander of the nation's military forces, appoints the chancellor and, upon the latter's recommendation, the ministers of government; but the cabinet thus appointed must enjoy the Reichstag's confidence. Arrangements and dispositions of the president, including those concerning the army, must (to become valid) be countersigned by the chancellor or a qualified government minister. The president's salary is 100,000 marks a year, with an additional allowance of 100,000 marks. The new judiciary system does not differ very materially from the old. Justice is administered through national and state courts; judges may be permanently or temporarily removed from office, transferred to other offices, or retired against their will only by virtue of judicial decisions and upon the grounds and in the forms provided by law. One section of the constitution establishes a national budget system; another provides for compulsory education (see below, — SCHOOL REFORM); still another annuls the constitution of 1871, while providing that other laws and regulations shall remain in force in so far as they do not conflict with the new constitution.

Area and Population.—The 'Statesman's Year Book' of 1922, page 940, has the following totals: Area, English square miles, 250,471, and population, 59,857,283. The area and number of inhabitants of each state are given, thus: Prussia, including the Saar, 181,698, with 36,684,717 inhabitants; Bavaria, including Coburg, 29,501, with 7,140,333; Württemberg, 7,629, with 2,518,773; Baden, 5,817, with 2,208,503; Saxony, 5,789, with 4,663,298; Mecklenburg-Schwerin,

5,068, with 657,330; Thuringia (the seven Thuringian states in combination), 4,546, with 1,508,025; Hesse, 2,966, with 1,290,988; Oldenburg, 2,482, with 517,765; Brunswick, 1,418, with 480,599; Mecklenburg-Strelitz, 1,131, with 106,394; Anhalt, 888, with 331,258; Lippe, 469, with 154,318; Waldeck 443, with 66,432; Schaumburg-Lippe, 131, with 46,357; Hamburg, 160, with 1,050,359; Lübeck, 115, with 120,568. Bremen, 99, with 311,266. Under the Treaty of Versailles, 28 June 1919, Alsace-Lorraine has been ceded to France; the greater part of West Prussia and a part of Eastern Silesia to Poland; a part of Upper Silesia to Czechoslovakia; Memel and Danzig to the Allies; Eupen and Malmédy to Belgium. All told, Germany lost approximately 27,275 square miles of territory with a population of 6,471,581. Plebiscites for determining the fate of other areas were provided for in the treaty as follows: The Saar Basin, after 15 years; Schleswig, in two zones; districts in southern East Prussia, in West Prussia, and in Upper Silesia. Upper Schleswig voted, in March 1920, for union with Denmark; Lower Schleswig, to remain German. In July of the same year, the East and West Prussian districts voted to remain in Germany. The Upper Silesian plebiscite occurred in March of the following year, and the vote favored Germany; but Polish residents rebelled, and, after there had been fighting in the open and wrangling in council, eventually 1,255 square miles, with 891,669 inhabitants were transferred to Poland.

Cities Having More than 100,000 Inhabitants.—Greater Berlin, 3,801,325; Hamburg, 985,779; Cologne, 633,904; Munich, 630,711; Leipzig, 604,380; Dresden, 529,326; Breslau, 528,260; Essen, 439,257; Frankfurt-on-Main, 433,002; Düsseldorf, 407,338; Nürnberg, 352,675; Hanover, 310,431; Stuttgart, 309,197; Chemnitz, 303,775; Dortmund, 295,026; Magdeburg, 285,856; Königsberg, 260,895; Bremen, 257,923; Duisburg, 244,302; Stettin, 232,726; Mannheim, 229,576; Kiel, 205,330; Halle-on-Saale, 182,326; Altona, 168,729; Gelsenkirchen, 168,557; Cassel, 162,391; Elberfeld, 157,218; Barmen, 156,326; Augsburg, 154,555; Aachen, 145,748; Bochum, 142,760; Brunswick, 139,539; Karlsruhe, 135,952; Erfurt, 129,646; Mülheim-on-Ruhr, 127,027; Crefeld, 124,325; Lübeck, 113,071; Hamborn, 110,102; Mainz, 107,930; Plauen, 104,918; Münster, 100,452.

Army.—The maximum strength of the army permitted by the Treaty of Versailles was 100,000 men, including not more than 4,000 officers. The demobilization was completed on 1 May 1919, and the *Reichswehr*, voluntarily recruited, and by 1 August numbering 500,000, came into being. Germany ratified the treaty 10 Jan. 1920, and one year later the reduction of the *Reichswehr* to the authorized maximum was completed. But other organizations that had come into existence during 1919 were: *Sicherheitspolizei*, 150,000; *Zeitfreiwilligen*, also 150,000, and *Einwohnerwehr*, 350,000. Under pressure in 1921 the second and third of these organizations were disbanded, while the first was deprived of its artillery equipment.

Navy.—By the terms of the armistice Germany was required to surrender or dismantle all effective fighting ships. The Treaty of Ver-





sailles forbids her to have submarines, and stipulates that the fleet shall consist of not more than six battleships of the pre-dreadnought type (vessels displacing about 13,000 tons), six light cruisers, 12 destroyers, 12 torpedo-boats; the personnel being limited to 15,000 men, including not more than 1,500 officers of all grades; and this small force must be secured through voluntary enlistment for periods of 25 consecutive years, or 12 consecutive years—the longer periods applicable to the more important officers, the shorter to the petty officers and men.

Fortifications and Air Forces.—Provisions of the treaty required the disarming of fortifications west of a line to be drawn 50 kilometers east of the Rhine, but sanctioned the maintenance of those on the eastern and southern frontiers. Coast defences of Kiel and Heligoland were razed, and the equipment of other fortresses had been surrendered promptly enough, albeit the Disarmament Commission had notice of many field guns and machine guns neither surrendered nor destroyed. Airplanes, seaplanes, airships, balloons, engines, sheds, hangars, bombs—all of these appeared to be sacrificial, and 14,741 airplanes and seaplanes and 231,086 bombs, with other aeronautical material in proportion, were actually sacrificed; the treaty provides that the armed forces of Germany must not include any military or naval air forces.

School Reform.—Germany is undergoing a thorough test of its school system and planning a reconstruction of its school policies. To this effect Reinhold Lehmann, Leipzig, writes in *School Life* (Washington, Bureau of Education, Department of the Interior, September 1922). The Constitution contains, in the section 'Education and the School,' nine paragraphs in which appear the establishment of a definite forward movement which puts an end to the domination or despotism ascribed to the *Standeschule* (class-distinction school), the Denominational School, and the *Lernschule*. The unconditional establishment of the Unity School, the Secular-Instruction School, and the Creative School does not necessarily follow. "In the main, the Constitution [in this field] makes promises only; but one cannot easily disturb this foundation." The first intimation of the eventual fulfillment of such promises is the law which guarantees a common primary school for the sixth to the tenth year of each child's life. It orders the suspension, not later than 1930, of all public and private preparatory schools and preparatory classes. In such schools, up to this time, the sons of the well-to-do class have been prepared for the secondary schools. At six years of age they were carefully separated from the children of the working people. The new primary school law was opposed by the wealthy and privileged classes. Its justification, Leipzig expositor claims, is that it may uphold until the tenth year of the child's life the democratic principle that the children of one people belong in one school and that the educational possibilities of all must be equal.

The next national school law, about which there has been the bitterest contest in parliament and press, in public assemblies, and in parents' and teachers' associations, puts the control on

the basis of ethics rather than of denominational religion. In spite of the efforts of the body of German teachers, a breaking up of the common schools on account of religious belief appeared inevitable. The constitution provides that the character of the schools in each community with respect to religious instruction shall be determined by the parents and guardians of the pupils. On account of this a perpetual school fight is engendered which threatens to disrupt every family. Some would establish schools for children of all denominations, but others (probably the majority) would have Protestant schools, Catholic schools, Jewish schools, Monistic schools, Secular-Instruction schools, etc. Germany has 529 sects, all jealous of their rights, and they are plunging the school system into chaos of small offshoots. Special cause for conflict lies in the question, Does the state alone have the right to supervise the religious instruction in the common schools? In small communities until 1918 the local clergy performed the entire school inspection. Large groups of orthodox churches would not willingly relinquish this function; but, as opposed to these, the majority of teachers in the common schools object to allowing the clergy again to participate in the school inspection. Many teachers make use of their constitutional right by declining to impart religious instruction. Then, often there arises in the village a demonstration against the godless teacher; or a school strike of the children may be started, so that the local authorities may obtain from the state a teacher more to their liking. On the other hand, children of the radical Socialists take part in street demonstrations, displaying red placards. "Everywhere orthodox and atheist are equally guilty; and with the momentary inner dismemberment of the German people, no beautiful oration, no reasoning exhortation by the pedagogical leaders will avail."

The training of teachers in its national aspect was recognized as the most vital problem in the field of education by the National School Conference which brought together 600 school men of every rank. Since all professional educators, from the elementary schools to the universities, have to fulfill in educating humanity a duty that is fundamentally the same, these educators should represent in the new state a single profession and receive accordingly a uniform preparation. This should be until about the nineteenth year in the general training schools leading to the university and then in the university itself. Here, in addition to the required subject of pedagogy, including psychology, the elementary-school teacher must carry at least one special subject of scientific, humanistic, or technical nature. Civics should be especially emphasized in the curriculum, and sociology might also be added.

In Saxony the university attendance is already fixed at three years. Other states will probably establish teachers' colleges, in close connection with the universities. In any case a movement is already in progress to do away with the special state normal schools; and the professors of education in the universities are becoming at last more numerous and more independent, even if the followers of tradition do struggle against recognizing pedagogy as a science and against

the best possible scientific foundation for their life's work. Since the Constitution expressly mentions civics and craftsmanship as subjects to be taught, the teaching profession is now doubly concerned in their associations and journals with these problems of teaching practice. Civics is offered as a subject of study, yet one would exempt, if possible, the elementary school pupil from it. The Constitution, of which every pupil receives a copy at the end of his compulsory school attendance, is made the central point of consideration. But the spirit of civic responsibility is to permeate the entire school life. The chief means toward this end appears to be pupil self-government, which is constantly increasing in favor.

The mechanical and inactive *Lernschulen*, with their lifeless "discipline" and external "authority," give way slowly to the vital and active creative schools. Progressive teachers make constructive exercises with material things the foundation of education. In all grades and all branches of instruction the "school of deeds" will independently, through play, constructive work, and action, reach the inner-life values of knowledge and understanding. "Self-development and the cultivation of all powers, both physical and spiritual, is the aim; together with prerequisites of a professional life, subjectively and objectively as correct as possible. Ethics and true religion will also grow out of the active community life which naturally cannot be bound to a rigid plan of instruction and of studies. Free, devoted work of the pupils and teachers in companionable groups is to establish an experiential morality and to prepare for fitness as members of the public community." The teachers have united in Hamburg, Frankfurt, Dresden, and Leipzig in order to conduct their individual experiments in the new field as a more unified, comprehensive, and reliable collective effort. Thoroughly progressive staffs meet, and have at their disposal standard experimental schools which are at the same time observation and training places for the entire body of progressive teachers. Educational authorities gravely disputed whether emphasis should be placed more on the intellectual self-activity of the pupil (the view of Professor Gaudig), or whether the hand also should be taken into consideration as much as possible (according to Professor Kerschensteiner). The ultimate development will, Dr. Lehmann thinks, move along a middle line, especially in the higher schools. "It might be impossible for our society of to-day to reach the alluring but difficult goal demanded by the radical school reformers, namely, that of making the school community fit into the whole economic plan by sharing in the production of commodities and of the necessities of the daily life."

The Band of Resolute School Reformers is conducting, under the leadership of Prof. Paul Oestreich, a well-founded agitation to create with the help of a new education, a new race for the development of a new culture, the constructive element of which shall be mutual helpfulness, solidity of character, and native creative energy of the individual and of the group. The fundamental principles and individual proposals of Oestreich and his energetic co-workers

are characterized by defenders of the old methods as a foretaste of Bolshevism; and yet the reformers merely desire to realize at last educational development in the spirit of Pestalozzi and Fichte. And the zeal of reformers is indispensable in view of the fact that definite promises of the Constitution have not yet been fulfilled. The informant of *School Life* writes: "The Commonwealth has permanency only through the intelligence and fitness of all its members. It must release all powers and make them serviceable to all. However, many a politician to whom every advancement in the direction of the education of the people is thoroughly hateful, skilfully conceals his real feelings behind financial considerations. Therefore, the hind financial considerations of the constitution are laws for the execution of the constitution are continually delayed and crossed. Only Saxony has for both boys and girls, after the eight years of elementary schooling, a three years' continuation school. The number of obligatory weekly study hours varies, according to the measure of self sacrifice of the community, from 3 to 12. Saxony also grants to the teachers the widest self-government. The old masters the power of the board of directors has been broken. The teaching staff of every school deliberate and decide matters concerning the school regulations, programs, courses of study, time schedule, the execution of the orders of the authorities, etc. Schools with more than 10 teachers choose a teachers' council of not less than three members. This council in co-operation with the school leader regulates all urgent school affairs. For the office of school leader the body of teachers makes recommendations, and the final appointment for three years is made by the local school board. The school leader receives no additional compensation, and does not have the right to inspect the instruction of the teacher and give directions as to methods; that right belongs now only to the learned specialist appointed as superintendent by the state. This right of sharing in the decisions secures for each individual teacher free development."

The parents' councils which have been legally established in different states have undertaken to further the work of the schools in the fields of child protection—of the care, education, and development of the young people in confidential co-operation with the teachers; to awaken and keep alive the feeling of responsibility for the care of the schools and their adjustment to the community; to secure the means which will aid the schools in the fulfillment of their aims. Parents' councils can make proposals to the school authorities, but are not permitted to control the internal and external school management, nor are they allowed to exercise the right of supervision. They are chosen annually by secret ballot. Unfortunately, in the choice of candidates, especially in the larger cities, the point of view of party politics prevails. About every three months there are "parents' evenings," which mobilize the educational possibilities of the family.

Universities.—There are in the republic 23 universities and seven lyceums, with approximately 88,000 teachers and students. The largest are those of Berlin (nearly 12,000 teachers

and students) and of Munich (just under 10,000). The other universities are given in alphabetical order, with dates of foundation: Bonn, 1818; Breslau, 1506-1811; Cologne, 1488-1919; Erlangen, 1743; Frankfurt, 1914; Freiburg, 1457; Giessen, 1607; Göttingen, 1737; Griefswald, 1456; Halle, 1694-1817; Hamburg, 1919; Heidelberg, 1386; Jena, 1558; Kiel, 1665; Königsberg, 1544; Leipzig, 1409; Marburg, 1527; Münster, 1786-1818; Rostock, 1419; Tübingen, 1477; Würzburg, 1402-1582.

Finance and the Mark.—The 1923-24 budget estimate, as made public toward the end of 1922, showed a total deficit of 359,200,000,000 marks, against 445,100,000,000 in 1922. That includes contribution (reparations) deficit 238,800,000,000 marks, against 316,400,000,000 in 1922; postal deficit 69,950,000,000, against 45,380,000,000; railroad deficit 43,230,000,000, against 26,990,000,000; state administration deficit 7,220,000,000 against 56,300,000,000 in 1922. Taxes and duties will bring in, according to this estimate, 653,800,000,000 marks, against 324,900,000,000 in 1922. Army expenditures total 26,000,000,000, against 4,100,000,000; navy 5,410,000,000, against 1,510,000,000; postal department 185,900,000,000, against 106,700,000,000; railroad 997,500,000,000, against 473,900,000,000; contribution 262,700,000,000, against 362,300,000,000. (In this connection, see the article entitled REPARATIONS.) Total receipts will be 1,786,010,000,000 marks, against 893,500,000,000, and expenditures 2,145,300,000,000, against 1,338,600,000,000 marks. The note circulation of the Reichsbank, at the end of December, 1922, amounted to 1,200,000,000,000 marks, compared with 754,000,000,000 marks at the beginning of December and 469,000,000,000 at the beginning of November. Private discounts at the Reichsbank amounted to 422,235,000,000 marks on 30 December as compared with 247,000,000,000 a month before and 101,000,000,000 two months before. At the end of July the private discount figure had stood at 3,000,000,000 marks. The floating debt in treasury bills, which was stated to be 1,166,000,000,000 on 30 November amounted at the last of December to 1,495,000,000,000 marks. Practically no wage agreements were fixed for January, 1923, because employers generally awaited political developments before assuming wage obligations. The circumstance that few strikes of any kind occurred toward the end of the year was attributed by the employers' association to the fact that the unions were no longer able financially to support strikes. The only large strike during December was at the Ludwigshafen plant of the Badische aniline and soda factory; the strikers won, gaining wages considerably above the average. The cost of living, as indicated by the government index, showed a 55 per cent increase from November to December as compared with 102 per cent increase from October to November. Rents in Berlin averaged on 1 January 1923 about 40 times the pre-war figure as compared with 30 times at the beginning of December. The advance was due to an increase in the supplementary payments under the maximum rent law. The amount of bullion in the principal German banks 19 January 1922: Gold, £49,769,850; silver, £611,500. And, when

the year had passed, the amounts were: Gold, £50,110,580; silver, £7,259,150.

At the beginning of 1922, the value of marks was given as 182 to the dollar; on 1 October, 1,815 to the dollar; on 7 November, as 8,392, and very soon after the beginning of 1923, as 20,850 to the dollar; by 31 Jan. 1923 the price had dropped to 48,700 to the dollar. Commenting on the causes and effects of the German mark collapse, *Commerce Reports*, 20 Nov. 1922, observed (basing the statements on a cable from Commercial Attaché Herring, Berlin, 11 November, to the Department at Washington) that the new collapse, together with the expectation of a further decline, resulted in popular apprehension, greater uncertainty in all business, increased price confusion, panic buying of goods, and all other incidents of previous drops in the mark. The beginning of the decline of 12 October was generally attributed to the cabinet crisis in England; since then basic factors which made a further mark collapse inevitable were in operation. These basic factors bringing about currency depreciation (the valued comments proceed) may be listed as follows: The continuing adverse balance of payments, as aggravated by reparation payments; the complete loss of confidence abroad in any mark recovery, with the resulting refusal to purchase and the unloading of previous holdings; the invoicing of 60 per cent or more of German exports in high-exchange currency, thus greatly diminishing the legitimate commercial demand for mark exchange; anticipatory purchase of foreign exchange by German industry and, of less importance, speculation by individuals; and lastly, although this is an effect rather than a cause, continued inflation. The theory that internal speculation in foreign values was largely responsible for the collapse of the mark seems somewhat invalidated by the violent depreciation since the passage of the law providing for the control of foreign exchange transactions. This measure was in fact not so much a practical expedient as a gesture to quiet public apprehension over the new mark depreciation; it was aimed chiefly at the prevention of smaller private speculation and had no effect on legitimate purchase of foreign exchange by industry which must obviously cover raw-material purchases when contracts are made. This law, which went into effect about the middle of October caused much protest from trade and industry.

The German note circulation at the end of October amounted to 469,000,000,000 Reichsbank notes and 14,000,000,000 Government Loan Office notes. The Reichsbank circulation advanced during the month from 316,000,000,000, but the amount of the loan office notes was practically unchanged. The rate of inflation increased month by month, the additional circulation having been in round numbers 12,000,000,000 in March, 17,000,000,000 in June, 20,000,000,000 in July, 48,000,000,000 in August, 78,000,000,000 in September, and 153,000,000,000 in October.

The floating debt of the German government was given as 721,000,000,000 marks on 31 October, of which 604,000,000,000 consisted of discounted treasury bills. Of these discounted bills

the money market had absorbed only 127,000,000,000 marks, leaving an excessive amount in the Reichsbank. Private discounts at the Reichsbank amounted to 101,000,000,000 marks on 31 October, of which 25,000,000,000 had been added during the last week in the month. On 30 September the private discount figure was 50,000,000,000 marks; on 31 August, 21,000,000,000; on 31 July, 8,000,000,000. The Finance Ministry reports the revenue of the German government from April to September (first six months of fiscal year) as 343,000,000,000 marks, 218,000,000,000 of this being derived from the floating debt and 123,000,000,000 marks from taxation, but the forced loan receipts came to only 2,450,000,000 marks.

The stock market experienced a strong bull movement. The extent of turnover and the work involved made necessary the closing of the exchange for two days a week. Nevertheless, the market level did not react in proportion to the fall of the currency. The *Frankfurter Zeitung* stock index on 3 November stood at 318,145, compared with 98,880 on 6 October. Domestic loans went from 1,345 to 2,133 during the period, and foreign loans from 46,115 to 77,660. The remarkable appreciation of securities is to be attributed in part to the discouraging effect of the anti-speculation measures on small investors who formerly speculated in foreign currencies. The gold value of the share capitalization of German industry, estimated in July by the *Berliner Tageblatt* at 6,800,000,000 marks (against 31,000,000,000 at the end of 1913), was considered to be undoubtedly less in November than in July.

The various difficulties due to the shortage of capital were becoming more pronounced. Conditions tended to bring about the elimination of smaller concerns which were unable to obtain adequate bank credit to meet the new price levels or proportionately increase their capitalization. This elimination took the form of absorption by large corporations rather than of bankruptcies. The larger concerns were forced to draw upon their foreign high-exchange reserves. Actual currency was also still scarce; municipal and other corporations were issuing emergency currency. The *Frankfurter Zeitung* gave October capital increases as 3,798,900,000 marks, largely in the metals and machinery industries, mines and smelters, public utilities, and banks. New incorporations amounted to 1,078,600,000 marks, chiefly in metals, machinery, food-stuffs, and banks. The capital increases in September were 3,748,400,000 marks, and the new incorporations came to 905,700,000; capital absorption apparently was lagging far behind currency depreciation and price levels. During October, six corporations issued 2,309,500,000 marks in fixed interest securities, as against 3,283,200,000 marks by 21 corporations in September. Coal prices were increased on 1 November by approximately 60 per cent, and textile raw materials were advancing so rapidly as to affect both the cotton and woolen textile industries severely. Inland potash prices effective 3 November showed an advance over those of 1 October of about 250 per cent, while pig-iron prices jumped four times during the month. The *Frankfurter Zeitung* wholesale price index for

98 commodities showed an increase from 43,233 at the end of September to 94,492 at the end of October, a much closer response to currency depreciation than was noted in retail indexes. It must be considered, however, in comparing wholesale and retail price movements for the month that the controlled and artificially low rent prices were included in the retail index, and also that end-of-the-month prices were given in the wholesale index as against average prices in the retail.

The cost of renewing stocks was out of proportion to the purchase price of stocks on hand, and much confusion resulted from attempts to arrive at a proper selling price. Sales at renewal prices were prohibited by the government, although a greater percentage of profit than usual was allowed to offset partially the currency depreciation. A great variety of prices was often found in the same locality and even in the same establishment, according to the time of purchase and the extent of profit necessary for duplication. All domestic trade was on a shifting price basis. Although internal payments in foreign currencies were prohibited except in special cases, yet the practice of calculating on a dollar basis was increasing. In export trade probably 60 per cent of the transactions were in high-exchange currencies. The labor market was probably less favorable during October than it had been in September (although official unemployment figures did not reflect this), but the slump in production predicted some time ago had not yet set in. Part-time employment was on the increase, but the eventual industrial crisis apparently was postponed. All proposals to introduce part-time work had to be approved by a government commission which refused such applications in a large number of cases. The weekly changes in the prices of iron and steel and certain other standard goods and the very frequent wage changes (often weekly) were resulting in many negotiations and much paper work, and, of course, brought about great economic waste. Likewise the government control of foreign trade and other activities, together with the shifting basis of all economic life, resulted in enormous unproductive employment among the "white collar" class; production costs were increased, and the effect of the lower gold value of wages was partially nullified. Labor unions reported that 52,349 of their membership were unemployed on 1 October. This was 8 per cent, against an unemployment of 7 per cent in September. The response of retail prices to the new currency depreciation was greatly retarded. Currency depreciated between 1 October and 31 October about 450 per cent, while the government cost-of-living index showed an increase up to 25 October of only 92 per cent over the September average. Doctor Kuczynski's minimum living-expense index for Berlin showed a 98 per cent increase for the second half of October. The government cost-of-living average for October showed 22,066, a 65 per cent increase over the September average. On 25 October the index stood at 24,702, showing that the increase was mainly toward the end of the month. Doctor Kuczynski estimated the minimum weekly living cost for a family of four

in Berlin to be 6,136 marks during the first half of October and 8,871 during the second half. Effective on 13 November, the price of rationed bread was set at 112 marks for a 1,900 gram loaf. The average weekly wage paid in Berlin during the second half of October, 5,200 to 6,000 marks, indicates that wages were not keeping pace with the greatly advancing living costs. [This condition was said to prevail in Germany as a whole.] The internal purchasing power of the mark, an average gold value for October, was estimated by Kuczynski at \$0.001, while the foreign exchange value (based on an average mark-to-dollar rate of 3,308) was given at \$0.0003. During the second half of the month the averages above were \$0.0008 and \$0.00028, respectively.

Shipping.—Lloyd's 'Register of Shipping' states that, while practically every other maritime country showed a decrease in shipbuilding during 1922, as compared with 1921, Germany continued to forge ahead, her production being second only to that of British yards. Launchings in Germany during 1922 were 525,829 gross tons as against 509,064 tons in 1921. The output for both years was above the pre-war figure of 465,000 tons. A striking comment was made by the Department of Commerce, Washington, 30 December 1922, substantially in the following terms: German ship-owners and ship operators stress the effect of the Versailles treaty on German shipping; yet, says Consul J. K. Huddle, Hamburg, in a report to the Department of Commerce, the large companies at Hamburg and Bremen are launching new vessels, and the modern shipbuilding works at North Sea and Baltic ports continue to lay down new keels, while hundreds of thousands of tons under other flags are lying idle. In the 12 months ended June 1922, German merchant shipping increased 1,170,000 gross tons; while the combined merchant fleets of the United States, the British empire, France, Japan, Italy, Greece, Belgium, and Portugal increased only 735,000 gross tons. With a gross registered tonnage of about 5,500,000 in 1914, and losses of 2,700,000 tons as the result of war-time operations and of about 2,900,000 tons as the result of the provisions of the treaty of Versailles, Germany's tonnage immediately after the war registered the small total of 400,000. Of this total the greater part was composed of old vessels, due for scrapping, and of small coastal vessels plying local North Sea and Baltic ports. There was not one ship expressly designed for overseas traffic. But a report just published leads to the belief that on 30 Sept. 1922, the German merchant marine amounted to a total of 2,013,500 gross tons. The additions for September alone (included in these figures) cover six vessels launched, aggregating 33,700 tons, and 11 vessels completed that aggregate 60,700 tons.

Another authoritative statement issued by the *Boston News Bureau* and which seems indispensable at this point shows that the number of vessels using Hamburg harbor in October increased, although traffic generally declined elsewhere. The tonnage of cleared ships totaled 1,238,331, compared with 1,281,230 in October 1913, while the tonnage of incoming vessels to-

taled 1,271,787, compared with 1,291,623. In 10 months ended October 1922, 11,167,973 tons cleared Hamburg, compared with 12,123,629 tons in the corresponding period of 1913. Incoming tonnage for same period totaled 10,918,446 and 11,891,076 tons. A shipping strike in July made figures lower than they otherwise would have been. It is intended to enlarge Hamburg harbor. Since May, Bremen sea traffic has surpassed that of 1913. Below is a comparison of the tonnage of vessels using Hamburg and Bremen harbors:

	Hamburg		Bremen	
	Entered	Cleared	Entered	Cleared
September, 1913	1,247,000	1,223,000	369,000	229,000
July, 1921.....	888,000	808,000	232,000	229,000
August.....	955,000	920,000	291,000	316,000
September.....	1,018,000	1,014,000	288,000	285,000
October.....	1,047,000	1,072,000	325,000	296,000
December.....	873,000	878,000	274,000	246,000
July.....	1,065,000	948,000	305,000	218,000
August.....	1,171,000	1,420,000	437,000	546,000
September.....	1,208,000	1,266,000	.....	.....
October.....	1,267,767	1,238,331	.....	.....

A total of 26 per cent of Hamburg tonnage in September carried the German flag and 34 per cent of the Bremen. The following table shows tonnage using ports of Hamburg, Rotterdam and Antwerp:

	Hamburg	Rotterdam	Antwerp
Third quarter, 1922...	3,445,000	3,187,000	3,201,000
Second quarter, 1922...	3,642,000	3,288,000	3,191,000
First quarter, 1922.....	2,560,000	2,502,000	2,803,000
First nine months, 1922	9,647,000	8,977,000	9,196,000
First nine months, 1921	6,772,000	8,288,000	8,197,000

Sea traffic in all German harbors in 1920 reached only 35.5 per cent of 1913 and just equaled traffic of 1890. In 1920, 52.8 per cent of incoming tonnage carried the German flag, compared with 61.1 per cent in 1913. Following table shows year's tonnage:

	Entered	Cleared
1920.....	12,544,881	12,360,486
1919.....	7,719,786	7,808,964
1913.....	34,772,177	34,921,806
1910.....	29,930,553	30,203,756
1905.....	24,135,754	24,269,989
1900.....	18,585,757	18,669,061

Traffic through Kaiser Wilhelm Canal increased monthly as shown in table below:

	Entered	Cleared
June, 1921.....	2,424,000	632,000
January, 1922.....	2,032,000	664,000
February, 1922.....	360,000	194,000
March, 1922.....	3,073,000	809,000
April, 1922.....	3,292,000	979,000
May, 1922.....	3,852,000	1,016,000
June, 1922.....	3,908,000	1,279,000

In June, 37.5 per cent of this tonnage carried the German flag, compared with 41.7 per cent in May 1922, and 53.3 per cent in June 1921.

Imports and Exports.—During the fiscal year ended 30 June, Germany imported from the United States: Copper (238,330,000 pounds, valued at \$31,517,000); wheat (21,782,679 bushels, valued at \$31,507,603); flour (1,516,362 barrels, at a cost of \$19,076,205); cotton (103,631,453 bales, costing \$130,841,050); lubricating oil, valued at \$12,056,160; milk-preparations, valued at \$4,774,050; bacon, at a cost of \$5,959,577.

For the foregoing seven products, the total was about \$235,700,000; while \$350,442,438 represented the sum of all Germany's imports from the United States in the same period of 12 months. In the fiscal year before the war, the total value of German imports of the same seven products from the United States was given as \$394,000,000. The Department of Commerce's summary for July and the first seven months of 1922 shows:

GERMANY'S IMPORTS FROM THE UNITED STATES.

	Seven months ended July	
	1921	1922
Meats.....	\$5,200,683	\$3,742,819
Milk and cream.....	3,809,607	2,198,689
Edible oils and fats.....	22,567,643	15,802,670
Grain.....	48,275,460	27,764,111
Flour.....	8,972,002	5,008,062
Total food (except sugar).....	\$88,825,395	\$54,516,351
Copper.....	17,395,097	17,063,112
Cotton.....	55,322,960	69,375,804
Mineral oils.....	9,485,830	17,421,644
Tobacco.....	2,398,111	1,862,524
Sugar.....		3,962,407
Starch.....		1,504,064
Miscellaneous.....	3,625,267	3,522,593
Total.....	\$177,052,660	\$169,228,499

GERMANY'S EXPORTS TO THE UNITED STATES.

	Seven months ended July	
	1921	1922
Coal tar products.....	\$822,702	\$992,964
Cotton manufactures.....	41,391	70,703
Lace articles.....	380,848	545,077
China, etc.....	1,002,242	784,195
Crockery.....		103,355
Furs and fur skins.....	1,527,063	3,277,703
Upper leather, dressed.....		187,892
Gloves.....	1,279,792	945,580
Grass seed.....		535,790
Total.....	\$5,054,038	\$7,443,259

A cable from Commercial Attaché Herring, at Berlin, gave the following particulars in regard to German foreign trade for September: German imports for September amounted to 4,830,000 metric tons with an estimated value of 421,000,000 gold marks. Exports amounted to 1,590,000 metric tons and had an estimated value of 280,000,000 gold marks. A new method is being used in the computation of the gold-mark value of imports which takes into account the ratio of the paper mark to the dollar for the preceding month and the world market price. Such fictitious import valuations are misleading, as the world price is often not ascertainable; and the balance of trade figures are consequently meaningless. The gold value of exports is less inaccurate as some 60 per cent of total exports are invoiced in high exchange currencies. The exact gold value of exports invoiced in paper marks or other low-value currency is undeterminable. In comparison with August figures by weight the following percentages of decrease are noted in certain commodities: Machinery, 27; paper, 4; and coal, coke, and other

mineral fuels, except oils, 5. Increases were as follows: Pottery, 5; glass, 8; rubber, 25; cotton textiles, 23; woolen textiles, 32; electrical goods, 12; musical instruments, 16; toys, 9; iron and steel goods, 23; heavy chemicals, 22; dyestuffs, 7; and leather and leather goods, 25. The large increase, particularly in textiles, leather, and some electrotechnical lines, apparently reflect the partial saturation of the domestic market and increased pressure on export markets.

Germany's exports to Japan have been increasing, and are now greater in volume than before the war. For the year ended May 1922 such exports amounted to 83,310,000 yen (1 yen = \$0.4985)—an increase of 22,150,000 yen over the 1913 figures. For the first five months of 1922, the amount of exports from Germany to Japan exceeded by 35,000,000 yen, approximately, the amount for the corresponding period of 1921—Japan buying from Germany: strings, ropes and materials therefor; dyestuffs, paints and colors; metals and manufactures of metal; clocks, watches and scientific instruments; chemicals, explosives; and, in smaller amounts, many other varieties of merchandise. Passing on now to the end of the year, we find that German exports, in the iron and steel industry, were increasingly hampered during December by production costs, by foreign competition, and prohibitive foreign tariffs. Foreign competition was also having a more noticeable effect on the chemical industry. Exporters of paper were resenting the high export tax. Exports of cotton textiles were decreasing, supposedly on account of American and Japanese competition.

Railways.—According to *The Guaranty Survey* (New York, 28 Aug. 1922), such developments had been made in the construction of railway equipment in Germany that the 150,000 freight trucks and the 5,000 locomotives delivered to France by Germany, after the armistice, were replaced by new material; and the rolling-stock of German railways was not only in quantity equal but in quality superior to that in use at the outbreak of the war. On 1 July railway rates were increased by 25 per cent. Even before that increase they were officially estimated to be on an average 72½ times those of 1914. The total length of railway lines on 31 Dec. 1919 was 35,919 miles, of which total 34,689 miles were state roads; but all the various state railways were transferred to the national government 1 April 1920. Freight rates were increased 133 per cent 1 October, bringing them to 370 times pre-war rates, and again raised 60 per cent 15 October. Passenger rates had reached 45 times pre-war rates, and were to be advanced 100 per cent 1 November. In April 1922 expenses for the fiscal year ending 31 March 1923 were estimated at about 100,000,000,000 marks, and in June at 153,000,000,000. In July this estimate was raised to 195,000,000,000, in August to 235,000,000,000 and in September to 395,000,000,000 marks. Wages paid to rail workers were adapted to the scale used in private industries, so that there was an increase of 45,000,000,000 marks in expenses from September 1922 to March 1923. In September monthly expenses of state railroads increased 26,600,000,000 marks, of which 10,200,000,000 was for wages and 16,400,-

000,000 for materials. The following table shows the rise in prices of most important materials during August and September (in marks a metric ton):

Coal.....	from 2,200 to 5,500, or 175 per cent
Rails.....	from 20,600 to 50,000, or 243 per cent
Iron sleepers.....	from 20,900 to 51,000, or 244 per cent
Bar pipe.....	from 19,470 to 46,000, or 240 per cent
Pine.....	from 8,000 to 25,000, or 239 per cent

About 25 per cent of total expenses were for coal. Authorities decreased amount of coal used to 16 metric tons for 1,000 locomotive kilometers, compared with 17.7 in April. During the first quarter of the 1922 fiscal year ordinary expenditures of state railroads totaled 30,400,000,000 marks, and incomes 32,900,000,000, leaving surplus of 2,500,000,000 marks.

Radio Development.—The Department of Commerce at Washington observes that Germany, deprived of all overseas possessions, has been building up within her own borders a system of radiotelegraph and radiotelephone stations that is second to none in the world. The loss to Germany of her ocean cable system, built up at great cost during the 15 years preceding the war, made her dependent on neighboring countries for all her international communication except the portion that she could handle by radio. The logical result has been the increased use of high-power radio stations for overseas communications, especially to the United States. At the end of 1922 and beginning of 1923 the central office of the Gesellschaft für drahtlose Telegraphie, located in Berlin, controlled the two great transmitting stations, Nauen and Eilvese, and the two receiving stations Gelton and Hagen. Both the transmitting stations work on schedule—Nauen with New York, Moscow, Madrid, Rome and Bucharest; Eilvese with Rome and Madrid. Both have transatlantic press schedules as well.

Public wireless telephony was inaugurated 1 Sept. 1922.

Crops.—Harvests of 1922 were as follows: Wheat, 1,957,000 tons; rye, 5,283,000 tons; potatoes, 40,655,000 tons. In 1921, the yield was: Wheat, 2,934,000 tons; rye, 6,799,000 tons; potatoes, 26,157,000 tons. In 1913, on the basis of the same area, the harvests were: Wheat, 4,043,000 tons; rye, 10,132,000 tons; potatoes, 44,023,000 tons. The sugar-beet crop amounted to 10,791,000 tons, as compared with 7,999,000 in 1921, the acreage under sugar-beet cultivation having been about 894,140, as compared with 802,750 in 1921 and 1,359,000 acres in 1914. The Department of Commerce, under date 14 Oct. 1922, stated: Germany for years before the war was the leading beet-sugar producer of the world. But within the territory turned over to Poland by Germany under the terms of the peace settlement were 296,400 acres of beet-sugar land. Furthermore, some of the best beet-sugar soil of the old empire was in the Posen region and the Danzig corridor. With the territory there passed also to Polish control two sugar refineries and 30 or more sugar factories. Experts estimate that 450,000 tons of sugar production have been lost to Germany by territorial cession out of the 2,700,000 tons of pre-war capacity. Aside from territorial losses, beet growing has been further curtailed in the area now included in Germany,

the acreage having fallen in the post-war period about 21 per cent, while yields per acre have fallen off approximately 30 per cent, chiefly on account of labor difficulties and soil deterioration.

Live Stock.—A livestock census taken in December 1922 shows in Germany 16,309,474 cattle, 5,556,086 sheep; 14,135,950 pigs and 4,135,950 goats. All of these figures show a decrease from the year before.

Lumber.—Assistant Trade Commissioner Zwickel, Berlin, states in *Commerce Reports*, 7 Aug. 1922, that approximately 26 per cent of the total area of Germany was, before the war, covered with forests representing 14,223,200 hectares (1 hectare equals 2.471 acres), and that the present area of the forests is estimated at 12,783,000 hectares, 1,440,000 hectares having been surrendered by terms of the peace treaty. The low purchasing power of the mark makes it impossible for Germany to meet its own demands for woods by purchase in foreign markets, as in pre-war years. For this reason the Prussian state forestry administration plans to increase the domestic supply by felling more trees; and this may be done without impairing the condition of the forests, which in the past have been cared for wisely. The control of Germany's foreign trade in lumber is intrusted to a semi-official organization which has the authority to grant export and import licenses. It also checks the sales price made by the exporter, to prevent disparity between the selling price and the world market. During the early part of the year there was much speculative buying. The point was reached, however, where almost all stocks of seasoned logs, rough timber, and other lumber were absorbed and rumors were afloat that there was a decided shortage, which tended to increase the prices. The high prices, together with a stringent money market, caused a decided slump in orders beginning in April 1922. It was claimed that the price of German lumber had reached the world market level and in some cases even surpassed it. The nonactivity of the building trade and the officially enforced low rents which retarded building, brought about an acute shortage of houses, apartments, stores, and other buildings throughout Germany. The increase of rents permitted by the government brought about a change in building circles, thereby increasing the demand for building lumber. The other uses of wood and lumber products in Germany are very similar to those in the United States. The furniture and veneering industries have experienced a very busy period in spite of the high costs of lumber. The use of wicker and reed furniture has developed rapidly in the past eight years, since the average German can no longer purchase the better quality of furniture. The German federal railways have placed large orders for ties and telegraph poles. Large orders have also been placed by England, Belgium and France. The demand for ship-building lumber was heavy. The shutting off of former sources of pulp wood, coupled with a heavy demand, played an effective part in taxing the German supplies.

Coal.—Vice-Consul Davis, Berlin, stated in a report to the Department of Commerce that the increasing importation of English coal into Germany was due primarily to the decrease in

German production which had been going on steadily since March 1922, when the peak of post-war production was reached. In March, with 27 working days, 9,014,278 tons were produced, a daily average of 333,862 tons. At the same time, statistical reports showed fuel exports from Germany to be greater than before the war. The suggestion had been made, both in the Reichstag and in the press, that all exports of coal should be forbidden, in order that the needs of German industry might be met without having recourse to imported fuel. The most serious difficulty in the way of increasing production was the circumstance that miners were turning to other and more profitable employment. The building trades in particular were drawing away the miners by offering higher wages,—about 264 marks per day for unskilled labor, as against 230 marks per day earned by pickmen in the mines. . . . The estimated coal production for 1922 was 115,000,000 tons. The Ruhr area produced 94,115,000 tons in 1921.

Taxation of Business.—Commercial and industrial firms doing business in Germany are, or may become subject to the income tax, corporation tax, tax on capital—income, property tax, and turnover tax, beside numerous minor taxes. To this effect the United States Consul at Hamburg wrote in September 1922. As a rule foreigners are subject to German taxation if they have their residence in Germany, or if they have their "ordinary" residence in Germany for the purpose of doing business, or if they have their "ordinary" residence in Germany for more than six months. The consul adds that "the liability to pay taxes is retroactive" and that "any American business man or concern doing business in Germany even for a short time is liable to German taxation." For his statement in full, see *Commerce Reports*, 25 Sept. 1922, pages 842 and 843.

Government Assistance to Unemployed.—From the office of the American commercial attaché, Berlin, came a study of this subject, dealing with conditions up to 21 June 1922. First, we are reminded that straightway after the revolution the workers demanded that their right to work should be recognized and that the new government should provide unemployment allowances when the aforesaid just claim could not be met. The new government announced that both demands would be fulfilled; a method was devised to absorb unemployment by creating emergency jobs, and a system of allowances was introduced. Under the system of emergency work the government arranged to pay a part of the production cost to any employer who should initiate an enterprise providing work for the otherwise unemployed. Cities and local governments undertook such activities, which comprised the repair of streets, railways and waterways. The central government contributed about 25 per cent of the cost of these emergency works. By August 1921 workers employed in these activities numbered 200,000, and a further 267,108 were receiving government unemployment allowances. Official figures indicating the number of persons who received these allowances in the spring of 1922 are: On 1 March, 212,572; 1 April, 116,302; 1 May, 69,017. In preparation for a time when labor's needs may become more acute, the gov-

ernment was postponing all repairs and new building, in connection with public works, which could possibly wait, and was holding such things as a reserve, or provision for anticipated crises of unemployment. All free states of the republic were asked to do likewise, and the central government made an investigation to determine the character of future emergency works. . . . According to the regulation of February 1920, it is illegal for an employer to discharge a worker on the ground that economic conditions no longer require so large a force. As a first step toward reducing his force, the employer is required by law to distribute the work among a larger number of employees by shortening the day. Whether or not economic conditions finally warrant discharge is decided upon by an arbitration committee in co-operation with the factory council of the plant, which includes representatives of the workers. No official or union statistics are published showing to what extent part-time employment was actually practiced. The unemployment expert at the ministry of labor stated that practically no part-time work was being done, but the publication, *Gewerkschaftshaus*, estimated that about 20 per cent of German industry was running on a part-time basis. To judge from general conditions, the statement of the *Gewerkschaftshaus* would seem to be correct. The approach to world market prices caused a falling off of inland as well as foreign orders in a number of industries; the coal shortage preventing others from producing to capacity. In a number of industries work was limited to the filling of orders placed months before, and in many cases new orders steadily decreased.

History.—Although a separate article is devoted to reparations, it is impossible to omit emphatic references to that subject while reviewing, however briefly, the course of events in 1922. It seems reasonable, indeed, or natural, that our restatement of the outstanding dates and events should include—yes, and begin with—such a memorable item as the following: On 8 January, the Cannes conference assembled; in due time its program for the year was agreed on; January and February payments by Germany (reparation for damage done) were reduced. Without intentional neglect of any class of subjects, let us take up the happenings in chronological order—noting, for example, that on 14 January, the day after the moratorium was granted, a chemist at Frankfurt was sentenced to nine months' imprisonment and fined 50,000 marks, for attempted betrayal and sale of laboratory secrets to an American dye company. . . . On 20 January, at Tempelhof, near Berlin, a fire occurred which injured 800 factory workmen. . . . On 2 February a general railway strike, beginning at Berlin, spread to Cassel and Chemnitz, and on 5 February 57,000 Berlin public utility employees struck, stopping the light, water, and trolley services. The railway strike ended 7 February. . . . On 21 March the Reparations Commission announced the details of the conditional partial moratorium for 1922, namely, 720 millions of gold marks in cash and 1,450 millions in kind to be paid for the year. (A note which Secretary Hughes had sent the day before to the principal Allied Powers asserted the right of the United

States to priority of payment, out of such reparations, of the actual cost of the American army of occupation on the Rhine). . . . On 29 March 1,000 American soldiers from the Rhine, and 1,065 bodies of those who had fallen over there—the last to be brought home of our incalculable "actual" sacrifices in the war—reached New York on a transport. . . . Less than one week later, at Mons, Belgium, the betrayer of Edith Cavell to the Germans was sentenced to death. (The sentence was commuted in July to imprisonment for life). . . . Germany and Russia entered into a trade and economic treaty at Rapallo, Italy, 16 April; and on the 18th, at Genoa, representatives of the Powers in convention and of the Little Entente adopted a resolution censuring Germany for that separately made compact. Again an interval of two days. Then, Germany's representatives agreeing to take no part in the Russian negotiations at Genoa, the separateness just referred to appears to have been rather stressed than otherwise. . . . At Berlin, 22 April, A. B. Houghton presented his credentials as American Ambassador to Germany. . . .

At Genoa, 9 May, German and Polish representatives at the conference accepted the Silesian frontier line, as drawn by the League of Nations; and on the same day, at Oberammergau, the Passion Play was presented, for the first time since 1910. . . . The first German Ambassador to the United States since the war Otto L. Wiedfeldt, arrived in New York, from Bremen, 13 May. . . . On 23 May, in a collision of the German battleship *Hannover* and the torpedo boat T-18, ten sailors were killed. . . . On the following day, 24 May, a committee of experts, international bankers, held a first meeting in Paris to consider the subject of a loan to Germany,—ultimately (i. e., before adjournment of the conference, 10 June) finding the loan impossible under the schedule of payments then in force; and to that effect advising, it is understood, the Reparation Commission. . . .

Near Wilhelmshöhe, an attempt was made 5 June to kill the German Socialist leader Philip Scheidemann. . . . At Hamburg, the new steamship *Avare* upset at the dock, and more than 20 lives were lost, 16 June. . . . The German foreign Minister, Walter Rathenau, was assassinated at Berlin, 24 June. . . . It was reported, 30 June, that the Berlin police had discovered a plot to kill all leading Jews in Germany. . . .

An attempt was made, 3 July, to assassinate a leading editor, Maximilian Harden. . . . On 4 July, the Rapallo Treaty with Russia (mentioned above, as of 16 April) was ratified by the German government. . . .

Workmen's demonstrations against monarchists led to conditions resembling those of civil war at Singen, Voelpe, Zwickau and Zittau, 5 July. . . . One week later, 12 July, Germany presented a formal request for a two and one-half years' moratorium. (Compare the statement in regard to loan and payments, under date of 24 May, above.) . . .

In Saaleck Castle, Saxony, 17 July, Fischer and Kern, the assassins of Rathenau, committed suicide. . . . On 5 August, the liquidation of individual German claims against France was suspended; and sub-

sequently, at the third London conference, which extended from 7 August to 14 August, France refused to grant a moratorium without further guarantees. . . . The United States and Germany agreed, 10 August, on a commission to adjust the claims of the former against the latter. . . . On 12 August began the expulsion of 1,500 Germans from Alsace by French authorities. . . . On 31 August the Reparation Commission granted to Germany a six-months' moratorium—payment to be in treasury bills, guaranteed in a manner satisfactory to the Belgian government. . . . The Majority and Independent Socialists decided at Berlin, 24 September, to form a working alliance. This was characterized as the beginning of a fusion of the two German Social Democracy parties, and of the reunion of German labor—that restoration of unity which the masses of German labor have constantly desired. An immediate result was, that in the Reichstag 70 Independent and 110 Majority Socialist deputies could be relied upon to act as one party, forming a bloc of 169 or perhaps even 180 in a legislating body with but 469 members. Moreover, this union of the two Socialist parties was a natural thing, to which only the quite artificial alliance of Volkspartei, Centre, and Democrats could be opposed. The fundamental differences between the three bourgeois parties could not be ignored. The footing of the Socialist union was relatively secure; that of the opposing alliance, positively insecure. Reunion of the German Social Democratic groups was ascribed to the pressure of events which were the outcome of the post-war economic and political situation—of intolerable conditions, prompting leaders of both factions to establish Social Democracy once more as a firmly co-ordinated unit so that it might, with trade-union prestige regained, resume its dominant influence in affairs of the national government also.

On 14 October, at Leipzig, nine young men were sentenced to terms of penal servitude, ranging from two months to fifteen years, for complicity in the murder of foreign Minister Rathenau. (See notes, above, 24 June—3 July). . . .

The following day, 15 October, riots in which two policemen and two Communists were killed, took place at Berlin. . . . On 24 October the Reichstag prolonged President Ebert's tenure of office by adopting a constitutional amendment declaring that the provisional president elected by the National Assembly at Weimar should be the lawful first President of the German Republic until 30 June 1925. (See constitution, above.) Notification of the amendment thus secured was then conveyed by the President of the Reichstag, the Chancellor, and the Minister of the Interior to President Ebert, whose acceptance was not in doubt—the vote for the amendment having been about four to one. The Reichstag at that time voted pension provisions for the first President and his successors. . . . Ex-Kaiser Wilhelm married, 5 November, at Doorn, Holland, the Princess Herminie of Reuss. . . . The United Socialists (see the note with date of 24 September, above) voted 14 November, not to participate in a Coalition ministry which included members

of the German People's Party, That night the cabinet of Chancellor Wirth resigned. . . . In the afternoon of 16 November, Wilhelm Cuno, director-general of the Hamburg-American Steamship Line, was commissioned by President Ebert to form a new cabinet and immediately consulted party leaders for the purpose of ascertaining their attitude toward supporting a cabinet which should include members of the Centre and Socialist parties — a cabinet of work, truly representative, not partisan. . . . On

21 November the new cabinet was constituted as follows: Chancellor, Wilhelm Cuno; Vice-Chancellor and Minister of Justice, Dr. Carl Heinze; Minister of Foreign Affairs, Herr von Rosenberg; Minister of the Interior, Rudolph Oeser; Minister of Finance, Andreas Hermes; Minister of Economics, Johannes Becker; Minister of the Treasury, Dr. Heinrich Albert; Minister of Transportation, Gen. Wilhelm Groener; Minister of Posts and Telegraphs, Herr Stingl; Minister of Food, Herman Mueller; Minister of Defense, Dr. O. Gessler; Minister of Labor, Dr. Heinrich Brauns. . . .

On 25 November Chancellor Cuno, when opening the session of the Reichsrat, announced his intention to call a meeting of the premiers of the federal states in order to secure their co-operation in solving the problems confronting the nation. . . . On 28 November began the

strike of the people employed in the Baden Aniline works at Ludwigshafen. (This was settled 18 December and all the workers except the strike leaders were reinstated. The strike was occasioned by the dismissal of three members of the workmen's factory council. Two days before the settlement the strikers received a telegram from Moscow, to the effect that Communists were sending 3,500,000 marks in token of solidarity.) . . . At London, 9 December, a conference on reparations opened, Premier Bonar Law presiding. Two days later, 11 December, this conference, dividing on the matter of the contemplated invasion of the Ruhr, adjourned to 2 Jan. 1923, at Paris. Premier Poincaré, the reports ran, demanded then a French occupation of the Ruhr as the price of a German moratorium. . . . At Washington,

14 December, it was disclosed that the flotation of a \$1,500,000,000 loan to ward off German disintegration had been suggested to American banking interests. . . . On the same day, at Berlin, two men who had (3 July) assaulted and wounded Maximilian Harden, editor of *Die Zukunft*, were sentenced. . . . At Paris, also the same day, the Allied Council of Ambassadors decided not to accept the German government's offer to pay 1,000,000 gold marks. Bavaria's penalty for attacks on Allied military-control officers at Passau and Ingolstadt, unless the Bavarian government should agree to carry out other imposed penalties. Strained relations between those officers and the populace were, of course, fairly matched by strained relations between Munich and Berlin; but that is to be a theme, rather, of unwritten passion plays in 1923.

MARRION WILCOX.

GETTYSBURG COLLEGE, a non-sectarian co-educational institution, founded in 1832 and located at Gettysburg, Pa. Until 14 Nov.

1921 its corporate name was Pennsylvania College of Gettysburg. In 1922-23 it had a faculty of 40 members, 600 students, property valued at \$1,200,000 and an income of \$135,000. William A. Granville, Ph.D., LL.D., is president.

GIBBS, Alfred Wolcott, American mechanical engineer: b. Fort Fillmore, N. M., 27 Oct. 1856; d. Wayne, Pa., 19 May 1922. He was a student at Rutgers College, New Brunswick, N. J., 1873-74, and was graduated at Stevens Institute, Hoboken, N. J., in 1878. He entered the service of the Pennsylvania Railroad as an apprentice in the Altoona shops in 1879. From 1881 to 1893 he was connected with railroads in the South, successively as draftsman and then master mechanic of the Richmond and Danville Railroad, and superintendent of motive power of the Central Railroad of Georgia. From 1902 to 1903 he was assistant mechanical engineer of the Pennsylvania Railroad and superintendent of motive power of the Philadelphia, Wilmington and Baltimore Railroad. From 1903 to 1911 he was general superintendent of motive power of the Pennsylvania road and on 1 July 1911 he was made chief mechanical engineer, which position he held until his death. He was a member of the American Society for Testing Materials (president in 1915), American Railway Engineering Association, American Railway Association, American Society of Mechanical Engineers, Society of Naval Engineers, the Eastern Railroad Association (president), and a member of the board of managers of Franklin Institute, Philadelphia.

GIBRALTAR, a British colony in the province of Andalusia, Spain, commanding the entrance of the Mediterranean. The governor, who is also commander-in-chief of the garrison, exercises all functions of government and legislation. The area of the colony is $1\frac{1}{8}$ square miles with a maximum elevation of 1,396 feet. The fixed civil population in 1921 was 17,690, of whom 9,205 were females. In addition there were 1,700 aliens. The military population averages about 6,000. The fixed population are mostly the descendants of Italian and Spanish settlers and are adherents of the Roman Catholic faith. There are four Roman Catholic churches and one Protestant cathedral. Each denomination receives an annual subsidy from the government of £500. There are 16 elementary schools of which 12 are Roman Catholic. The pupil enrolment in 1921 was 2,604. The revenue of the colony in 1920 was \$1,435,255 and the expenditure \$1,864,970. Revenue is derived chiefly from customs, postal receipts, port and harbor dues, licenses, etc. The chief expenditures are for the maintenance of existing establishments, public works, pensions and ecclesiastical subsidies. There is no public debt. The industries of the colony are negligible. There is a large transit trade and the colony is an important coaling station for steam vessels. There is ample means of communication with England and the Continent. There are four private banks and one government savings bank. The legal currency is that of Great Britain but Spanish currency is in circulation. The governor in 1922 was Gen. Sir Horace L. Smith-Dorrien and the colonial secretary, Major C. W. J. Orr.

GIBSON, Joseph Thompson, American clergyman: b. Jefferson County, Pa., 13 Feb. 1844; d. 17 July 1922. He received the degree of A.B. from Washington and Jefferson College, Pennsylvania, in 1869 and was graduated from the Western Theological Seminary, Pennsylvania, in 1872. He received the degree of D.D. from Grove City College, Pennsylvania in 1893 and from Washington and Jefferson College in 1895. He was a sergeant in the 78th Pennsylvania infantry, 1861-64, and fought in the battles of Missionary Ridge, Stone River, Chickamauga and Lookout Mountain, etc.; and was wounded at the battle of New Hope Church, near Atlanta, Ga. He was superintendent of public schools of Indiana County, Pa., from 1869 to 1871, and was ordained to the Presbyterian ministry in 1872. He was pastor at Govanstown, Md. (1872-80) and at Sharpsburg, Pa. (1880-87). He served as secretary of the Synodical Sustentation Presbyterian Church (1887-90) and secretary and treasurer of the board of missions for Freedmen (1884-94). He was editor of the *Presbyterian Messenger* (1894-98); associate editor of the *Presbyterian Banner* (1898-99), and editor of the same from 1917 to the time of his death. He was also president of the Presbyterian Banner Publishing Company. He was acting pastor of the East Liberty Church, Pennsylvania (1901), trustee of the Western Theological Seminary, of Grove City College and of the Presbyterian Hospital, Pittsburg, and a member of the Chickamauga National Military Park commissioners for Pennsylvania (1894-99). He was also chaplain-in-chief of the Union Veteran Legion of the United States. He was the author of 'Biographical History'; 'Official History of the 78th Regiment, Pennsylvania Volunteer Infantry'; 'Jesus Christ the Unique Revealer of God'; and the 'Origin and History of the English Bible.'

GIFTS AND BENEFACTIONS. Among the principal gifts and benefactions announced during 1922 were the following: Anonymous gift of \$500,000 to Northern Baptist Fund; William P. Armstrong left by will to Wesleyan University at Middletown, Conn., \$100,000 in cash and residue of his estate of over \$1,000,000 to the New York Conference of the Methodist Episcopal Church, \$100,000 each to Home for Missions and Church Expansion of the same church; George F. Baker, \$1,000,000 as an endowment fund to the Metropolitan Museum of Art, \$250,000 to the American Museum of Natural History, \$500,000 to the New York Hospital and \$700,000 to Columbia University for the purchase of 46 acre tract for a stadium in the Dyckman section of the city of New York; Ball Brothers, of Muncie, Ind., gave \$1,000,000 to charitable and educational institutions; Mrs. Beatrice Boeke bequeathed 28,000 shares valued at \$1,000,000 in Cadburys Limited to the employees of that firm; Frederick Bertuch left by will to Columbia University \$100,000, and numerous minor benefactions to various charities; Miss Emily Howland Bourne left by will \$300,000 to the New York Association for Improving the Condition of the Poor; William Jennings Bryan gave his \$100,000 home near Lincoln, Neb., to the Methodist Episcopal Hospital Association; the Carnegie Corporation between 1 Oct. 1921 and 1 Oct. 1922 donated \$3,816,510 to

various colleges and organizations, including \$300,000 to New York University, \$200,000 to the University of Cincinnati, \$150,000 to the California Institute of Technology, \$150,000 to the Georgia School of Technology, and \$100,000 to the Stevens Institute of Technology; the Carnegie Corporation of New York set aside \$1,600,000 for the establishment and maintenance of an Institute of Economics at the national capital; Mrs. Lydia C. Chamberlain left by will to Columbia University \$500,000 for the establishment of fellowship; Mrs. Helen T. Cole left by will \$150,000 to the Presbyterian Hospital, New York; Senator James Couzens of Michigan donated \$1,000,000 to the Children's Hospital of Detroit; Charles R. Cross left by will to Harvard University \$100,000; Mrs. A. Gertrude Cutter bequeathed \$796,000 to the Hospital for Deformities and Joint Diseases; Robert W. De Forest and Emily Johnston De Forest donated \$2,000,000 for an American wing to the Metropolitan Museum of Art, New York; Cleveland H. Dodge gave \$165,000 to American colleges in the Near East; George Doheny of Syracuse, N. Y., left by will to Saint Joseph's Hospital of that city \$250,000, and \$150,000 each to Memorial Hospital, House of Providence, Onondaga Orphans' Home, Homeopathic Hospital, Saint Vincents Orphan Asylum, Syracuse Home Association, Syracuse Free Dispensary, and Saint Mary's Maternity Hospital; J. B. Duke gave \$1,125,000 to Trinity College, Durham, N. C.; the Educational Commission of the Commission for Relief in Belgium donated 15,000,000 francs to the University of Brussels; Amos F. Eno left by will \$272,000 to the American Museum of Natural History; Stanley Field of Chicago gave \$200,000 to clear off the building deficit of the Field Museum of Natural History, Chicago; John H. Flagler left by will to Saint Lukes, the New York and Presbyterian Hospitals \$1,000,000 to be shared equally also \$70,000 to the Saint Cecilia Club; Henry Ford bought the farm of the late John Burroughs and presented it to the Burroughs Memorial Association; Mrs. Stephen Harkness gave \$750,000 to the Fifth Avenue Presbyterian Church for a parish house; and \$3,000,000 to Yale University to increase the salaries of the faculty; August Hecksher gave 10,000,000 marks to Munich, Bavaria, for a hospital for shell-shocked soldiers; A. Barton Hepburn left by will \$750,000 to Hepburn Hospital at Ogdensburg, N. Y., \$200,000 to Middlebury College, Vermont, \$150,000 to Columbia University, and \$100,000 to Saint Lawrence University at Canton, N. Y.; the Mount Sinai Hospital, New York received \$150,000 through the will of Alfred S. Heidebach; Mrs. Sarah L. Holden of Newburgh left by will \$100,000 to Saint Luke's Maternity Hospital, and \$100,000 to the Holden Home for Aged Women; Margaret Howard of New York left by will \$400,000 for the establishment of the Howard Home for Indigent Needlewomen and the residue of her estate for its maintenance; Mrs. H. B. Hyde bequeathed \$100,000 to four hospitals; Mrs. Alice Tobey Jones left by will \$3,000,000 to the Bide-a-Wee Home Association for the prevention of cruelty to animals; Colonel and Mrs. Anthony B. Keuser left to the State of New Jersey their High Point estate of over 10,000 acres for park purposes; Samuel Mather of Cleveland gave

\$2,500,000 to Western Reserve University for construction of buildings for its medical school; Mrs. Calista S. Mayhew of South Orange, N. J., left the bulk of her estate of \$3,000,000 to various schools and charities; Miss Phoebe Mills left \$500,000 to the Presbyterian Church, its hospitals and charitable institutions; Frank Munsey gave \$100,000 to Bowdoin College, Me.; Miss Mary Oakley left her estate of \$300,000 to numerous charities; Baroness Solomon de Rothchild bequeathed her estate of 10,000,000 francs to the city of Paris; Jacob H. Schiff left by will \$1,350,000 to various charities and institutions and 2,000,000 marks to the city of Frankfurt, Germany for municipal purposes; Mrs. Mary Scranton of New Haven, Conn., bequeathed \$850,000 to charities; Herman Sielcken, a German-American, bequeathed \$600,000 to Baden-Baden for a Maternity Home for Poor Mothers; William Sloane donated \$100,000 to the Y. M. C. A., \$100,000 to the Presbyterian Hospital, \$100,000 to Yale University, and numerous minor bequests; Delavan Smith, of Indianapolis, bequeathed \$100,000 to the Methodist Episcopal Hospital, \$150,000 to the Indiana Historical Society and \$100,000 to the Lake Forest Hospital Association; Mrs. Dexter Smith bequeathed \$100,000 to Wesleyan University; the same institution received \$170,000 through the will of Mrs. Harriet A. Smith, who also left \$120,000 to the Springfield (Mass.) Hospital; Mrs. Anna M. Swift left \$500,000 in charitable bequests; Mrs. J. T. S. Wells donated \$300,000 to the City and Suburban Homes Company and the Open Air Tenement Company; Dr. I. C. White, left to the University of West Virginia and the city of Morgantown 1,900 acres of coal lands estimated to produce a total revenue of \$3,000,000; the Samuel Clark Williams estate estimated at from \$200,000 to \$1,000,000 was left to the Salvation Army to be known as the Hiram Williams Foundation; John D. Rockefeller, Jr., gave \$1,000,000 to the American Museum of Natural History. The Rockefeller Foundation gave a total approximating \$12,500,000 during the year, of which \$6,000,000 was to the Johns Hopkins School of Hygiene and Public Health, \$2,000,000 to the London School of Hygiene, \$2,500,000 for the relief and control of hookworm, tuberculosis and yellow fever and \$1,510,000 for medical schools and hospitals in China. The total appropriations of the General Education Board in 1922 totaled \$8,221,900. See also PAINTING AND SCULPTURE.

GIPSY MOTH. See ENTOMOLOGY, UNITED STATES BUREAU OF.

GIRL SCOUTS, Inc., a national, non-sectarian, non-partisan movement, which has for its object the development of wholesome happy girlhood prepared for effective citizenship through participation in small, self-governing groups. Patterned after the British Girl Guides, it was founded here by Mrs. Juliette Low of Savannah, in 1912. In 10 years it has spread to every State, and is now in 2,500 communities, with a total membership of 130,000, of which 10,000 are officers. It is affiliated with scouting organizations in more than 30 countries throughout the world. The governing body, the national council, composed of delegates from local councils, meets annually. The national executive board,

through its New York City headquarters (189 Lexington Avenue), carries on the work of recruiting and training leaders, distributing supplies and equipment, issuing literature, and aiding in local development. Activities center about home, health and citizenship, as adapted to the interests and capacities of girls from 10 to 18 years of age. Eight girls with an elected leader make up a patrol. Two or more patrols constitute a troop. The troop, the administrative unit, usually has about 32 girls, and is headed by a captain, at least 21 years of age, whose character and competence as a leader of younger girls have been attested to before she is commissioned. The captain may have several lieutenants. To become a scout, a girl must pass a "Tenderfoot" test, and subscribe to the "Scout Promise" of duty to God and country, and "Laws" of honor, loyalty, helpfulness, friendliness, courtesy, humanity, obedience, cheerfulness, thrift and cleanliness. These laws are the rules of the scout game, and all the activities of troop and patrol are subject to them. As scouts, girls learn cooking, sewing, home nursing, child care, self help and resourcefulness in many lines, as well as first aid and life saving, and other forms of community service. Proficiency is rewarded by badges in over 50 subjects. The distinctive method of scouting is the patrol system, which places responsibility and authority upon the individual girls through their chosen leaders. Captains and lieutenants act as elder companions and guides, rather than as teachers or supervising officers. Troop business and discipline by patrols are carried on through the court of honor, made up of leaders and the captain. This gives a practical experience in democratic and representative government on a comprehensible scale. The weekly troop meetings are taken up with games that involve specific knowledge of various sorts, acquired in the natural way of education by play. Singing and dancing, especially folk dancing, story telling, spontaneous expression through dramatizations and cheer making, are all used. Business-like keeping of records and accounts is encouraged by inter-patrol competition. Hiking and camping and outdoor activities generally are preferred. More than 100 Girl Scout camps were maintained in 1922, of which 61 were permanent.

Standards of achievement and general morale, particularly in the choice and training of the young captains, upon whose qualities of leadership so much depends, are the special concern of local councils, now numbering 298. The grade of young women attracted to scouting is shown by the fact that over 60 per cent of the captains have had more than high school training, nearly 40 per cent having graduated from college, and the rest from normal or other professional schools. Training courses for leaders have been established in more than 80 colleges and other institutions of higher learning, and are called for in many more. The Girl Scout program has been endorsed by the following national organizations: The American Association of University Women, the Girls' Friendly Society, the American Red Cross and the National Board of Social Agencies. Publications include: 'Scouting for Girls,' (the official handbook, 576 pp., illustrated); 'Campward Ho!' (a manual for camp directors); 'The

Blue Book of Rules for Girl Scout Captains,' miscellaneous pamphlets on community service, council organization, training courses, and special programs for younger and older girls, and a monthly magazine, *The American Girl*. The officers for 1922 follow: Founder, Mrs. Juliette Low; president, Mrs. Herbert Hoover; vice-presidents, first, Mrs. James J. Storrow; second, Mrs. Arthur O. Choate; third, Mrs. Julius Rosenwald; fourth, Mrs. William F. Sims; fifth, Mrs. E. M. Swift; chairman, executive board, Mrs. V. Everit Macy; counsel, Mr. Douglas Campbell; treasurer, Mrs. Nicholas F. Brady; National Director, Mrs. Jane Deeter Rippin. Executive Board, Miss Sarah Louise Arnold, Mrs. Leo Arnstein, Mrs. Selden Bacon, Mrs. Nicholas F. Brady, Mrs. Frederick H. Brooke, Mrs. Francis K. Carey, Mrs. Arthur W. Hartt, Miss E. Gwen Martin, Mrs. William G. McAdoo, Mrs. Robert G. Mead, Miss Llewellyn Parsons, Mrs. Harold I. Pratt, Mrs. Theodore H. Price, Mrs. W. N. Rothchild, Mrs. A. Clifford Shinkle, Mrs. Charles Welch, Mrs. Percy H. Williams. Permanent Committee: secretaries, education and publications, Dr. Louise Stevens Bryant and Dr. Elizabeth Kemper Adams; field and standards, Miss Sybil M. Gordon; camp, Miss Louise Price. The work is supported by membership fees, sales of literature and equipment, and contributions.

LOUISE STEVENS BRYANT,
Educational Secretary.

GLASGOW, Robert, Canadian editor: b. Canada, 1876; d. New York, N. Y., 5 April 1922. Until 1916 he had carried on a publishing business in Toronto, Canada, and had published 'The Chronicles of Canada.' He later edited 'The Chronicles of America,' a 50-volume historical work that gained him the honorary degree of M.A. from Yale University in 1919. He was a member of the Canadian and Yale clubs. The Yale University Press has created at Yale the Theodore Glasgow Foundation in memory of a son, an aviator in the Canadian army, who was killed over the German lines in Flanders during the World War. Mr. Glasgow had incorporated his recent publishing activities under the name of the United States Publishers' Association.

GLASS INDUSTRY. The glass industry is recovering rapidly from the depression of 1921. Window glass suffered largely from the depression in building, but the recovery of that industry in 1922 brought back this trade. Bottle glass suffered from the diminution of the liquor traffic, but trade began to revive early in 1922, and were it not for wage disputes, the two branches of the industry would be classed as normal. The importation of glassware tends to reduce slightly, and also the export. The great development of machinery for glass-making in America has more than offset the lower cost of labor abroad. In no European country is the glass business back on a satisfactory basis. In Belgium it is down fully one-half; the French industry makes an even poorer showing, and in Great Britain glass manufacturers complain that the German glass is finding its way in, at prices with which they cannot compete. That the German glass industry is doing better than any other on the continent is shown by the fact that that country is paying part of its indemnity to Italy in glass, much to the disgust of Italian glass

workers. The Germans are using some American bottle-machines, and the other countries named use a very few, and would buy more if they had the credit to buy them. Canada bought a good deal of American glass during and since the World War, and Mexico, Belgium, Cuba and Argentina bought, but all of this trade appears declining, while the home demand is enough to keep American factories busy. The satisfactory condition of the glass trade seems largely due to willingness to moderate prices to the consumer. In April, 1921, the American Window Glass Company cut prices 21 per cent, and in January 1922, followed with another cut of 23 per cent. Two-thirds of the window glass is now made in 27 factories by machine methods. Of the bottle glass, 50 per cent is wholly machine-made and about 33 per cent is produced by semi-automatic machinery. In 1921 the glass industry of the United States included 328 establishments, which gave occupation to 59,705 people. With \$86,883,000 of materials they produced \$212,593,000 worth of goods. We continue to import high-grade glass, at an average duty of 28 per cent. The following table shows the details.

IMPORTATIONS OF GLASS AND GLASSWARE

	1920	1921	1922 (Est.)
Bottles, ordinary.....	\$335,000	\$317,000	\$295,000
Bottles, cut, etc.....	1,462,000	1,564,000	2,220,000
Optical.....	1,045,000	999,000	1,371,000
Window glass.....	1,527,000	2,378,000	2,640,000
Plate glass.....	2,913,000	2,090,000	3,752,000
Other.....	3,466,000	2,698,000	.....
	<u>\$10,648,000</u>	<u>\$10,036,000</u>	<u>.....</u>

Of more than ordinary interest was the announcement made in 1922 that at one of the oldest of the glass factories in Bohemia, after many years of experiments, a glass had been produced which, it was claimed, is absolutely unbreakable. Receptacles made from the material, it was said, can be thrown about, made red hot and then put into cold water and yet do not break. It was claimed that hammers made from the material can be used for ordinary purposes. The glass is difficult to cut, even with a diamond, while the ordinary carborundum stones are useless for the purpose. Another new and interesting discovery of considerable importance to the glass trade was reported by two Czech engineers. The manufacture of glass and glassware is one of the leading and oldest-established industries of Czechoslovakia, Bohemian glass having enjoyed a reputation in all parts of the world for several centuries. The new discovery is that of a silica which is suitable for the production of raw glass without the aid of other ingredients. The mineral is of volcanic origin, somewhat resembling lava, and the deposits are said to be very extensive.

GLEICHEN, Lady Feodora, English sculptress: b. London, England, 20 Dec. 1861; d. there, 22 Feb. 1922. She was a daughter of the late Admiral Prince Victor of Hohenlohe-Langenbourg, son of Queen Victoria's half-sister, for whom Lady Feodora was named. When the Prince was born, Queen Victoria asserted that he should be brought up as an Englishman, which was done. He went into the navy and distinguished himself in the Crimea,

the Baltic and China. He married Laura Wilhamina, a daughter of Admiral of the Fleet Sir George Seymour, and sister of the fifth Marquess of Hertford. He was himself a sculptor of considerable ability. Prior to 1917 Lady Feodora was known as the Countess Feodora Gleichen, her brother, Maj.-Gen. Lord Edward Gleichen, who distinguished himself in the Boer War and also in the World War, as Count Gleichen, and her sister, Lady Helena Gleichen, the artist, who lived with her in Saint James' Palace, where she died, as Countess Helena Gleichen. Lady Feodora studied art at the Slade School, the University College under the late Professor Legros, and also in Rome. After 1893 she was a regular exhibitor at the Royal Academy. Among the best-known of her works are the life-size figure of Queen Victoria, executed for the Victoria Hospital in Canada in 1895; a bust of Queen Alexandra, belonging in 1922 to the Constitutional Club; fountain in Hyde Park, executed in 1902; the external decoration of the Foundling Hospital in Cairo; the Edward VII Memorial at Windsor; the Florence Nightingale Memorial at Derby, two busts of Queen Victoria; panel for the exterior of the National Art Gallery; a fountain in Paris; memorial (unveiled October 1921), at Monchy-le-Preux to the fallen of the 37th British division, which was formed and at first commanded by her brother, Lord Edward Gleichen, and a bas-relief of her nephew, Roger Machell, as a baby. She was an accomplished modeler, and in her work manifested a breadth and simplicity, attributable, undoubtedly, to the teachings of Legros. She was also a very good water-color artist and draughtsman and was an honorary member of the Royal Institute of Painters in Water-Colors and of the Royal Society of Painter-Etchers.

GLENNEY, Charles, English actor: b. Glasgow, Scotland, in 1857; d. Worthing, Sussex, 1 Oct. 1922. The son of an actor, he made his first appearance in London in 1878 as Thuerdier in 'The Barricade' at the old Duke's Theatre, Holborn. He then played at the Criterion, Globe and Royalty theatres, London, and in 1880 was engaged by Henry Irving. He appeared at the Lyceum as Tybalt in 'Romeo and Juliet,' Don Juan in 'Much ado about Nothing,' etc. In 1881 he came to New York and joined Lester Wallack and played in 'Moths,' 'An American Wife,' 'Deception,' 'Lady Clancarty' and other dramas. Returning to England in 1885 he appeared at the Adelphi in 'The Last Chance,' and, rejoining Irving appeared as Gratiano in 'The Merchant of Venice,' Valentine in 'Faust' and Strahlenheim in 'Werner' as well as in various Shakesperian plays in 1887. In 1888 he was at the old Princess' Theatre as Jack Manley in 'The Still Alarm.' After a period at Drury Lane, he became associated with Martin Harvey, the well-known actor-manager and played leading parts with him in 'Richard III' and 'The Only Way to Pay Old Debts.' He attracted some attention as Christopher Sly in a production of 'The Taming of the Shrew' at the Prince of Wales Theatre. He also played in 'The Aristocrat' with Sir George Alexander. Other roles in which he achieved success were

Colonna in 'The Corsican Brothers'; Count von der Trenk in 'Armageddon'; Colonel Hungerford in 'The Breed of the Treshams'; and Maurice Morris in 'The Faun.' He also played in variety with Miss Kate Cutler.

GLIDERS. See AERONAUTICS.

GODDARD, Arabella, English pianist: b. Saint Malo, Brittany, France, 12 Jan. 1836; d. Boulogne, France, 20 April 1922. She came of an old Salisbury family and early displayed a talent for the piano and at the age of seven played for Chopin and was caressed by Georges Sand, who heard her on this occasion. At the age of eight she studied with Kalkbrenner in Paris. Afterwards she had lessons with Mrs. Andersen, Thalberg and J. W. Davison in England. The latter, who was musical critic of the *London Times*, she married in 1860. Her real début took place at a grand national concert at Her Majesty's Theatre in 1850, Balfe conducting. In 1854-55 she traveled in Germany and Italy giving concerts. At a Gewandhaus concert in Leipzig, in 1855 she had an enthusiastic reception. In 1856 she won a gold medal at a Philharmonic concert in London. From this time forward she played frequently in London and other English cities and towns and in 1873-76 made a long tour around the world, visiting the United States, Australia, China, Java and India. She won a medal at the Paris Exposition in 1878 and retired in that year from public life. Madame Goddard played in Sims Reeves's benefit concert, London, March 1882 and her own benefit concert 9 March 1890.

GOLD. According to a report issued by the Bureau of the Mint, in co-operation with the Geological Survey, the refinery production of gold in the United States in 1922 was 2,375,019 ounces valued at \$49,096,000, a decrease in value from the production of 1921 of \$971,000. The country's record production occurred in 1915 when the output was valued at \$101,035,700. California, as usual, led in production in 1922 with a total output of 717,358 ounces, valued at \$14,829,100. Alaskan production amounted to 380,769 ounces valued at \$7,871,200. In 1921 California produced 716,477 ounces and Alaska produced 412,915 ounces. The total production for the United States by years from 1917 to 1921 inclusive was as follows: 1917, 4,051,440 ounces; 1918, 3,320,784 ounces; 1919, 2,918,628 ounces; 1920, 2,476,166 ounces; 1921, 2,422,006 ounces. The table on page 359, prepared by the Bureau of the Mint and the Geological Survey, shows the production by States in 1922.

South Africa is to-day the great gold producing section of the world. According to the United States Department of Commerce in 1922 its production amounted to 7,020,110 fine ounces, valued at £29,835,467, against 8,114,516 ounces valued at £42,529,596 in 1921. These figures are based on the standard price of 85 shillings an ounce to which the price was reduced from 88 shillings and 6 pence in November. The falling off in production during 1922 was due to the disastrous strike in the Rand in March. The management of the great mines in that locality felt that cost had to be reduced and one method of reduction proposed was to reduce the proportion of white labor and replace with black

REFINERY PRODUCTION OF GOLD IN THE UNITED STATES IN 1922.

STATE OR TERRITORY	Gold	
	Ounces	Value
Alaska.....	380,769	\$7,871,200
Arizona.....	159,870	3,304,800
California.....	717,358	14,829,100
Colorado.....	315,313	6,518,100
Georgia.....	261	5,400
Idaho.....	23,355	482,800
Montana.....	73,100	1,511,100
Nevada.....	156,198	3,228,900
New Mexico.....	16,070	332,200
North Carolina.....	73	1,500
Oregon.....	23,094	477,400
Pennsylvania.....	126	2,600
South Dakota.....	324,649	6,711,100
Tennessee.....	213	4,400
Texas.....	15	300
Utah.....	107,721	2,226,800
Virginia.....	34	700
Washington.....	9,119	188,500
Philippines.....	67,681	1,399,100
Totals.....	2,375,019	\$49,096,000

Kaffirs. The custom had been to use 10 per cent of white labor, mostly in directive positions. The company not only undertook to reduce wages but also to reduce the proportion of white labor to 8 per cent and to advance a sufficient number of the more competent blacks to better positions. The strike that followed led in March to pitched battles in which 217 men were reported to have been killed and 591 wounded. It ended in a victory for the mine owners.

The tendency in South Africa is to improve machinery and reduce hand labor. The most forward movement has been made by the New States Areas Company, on the Witwatersrand, which has built enormous new works, with a capacity of 50,000 tons of ore a month, in which the ore is crushed entirely without gravity stamps and without amalgamation. Crushers and tube-mills are used instead; great jaw crushers reduce the lumps of ore to a size not over 2½ ins. This product is further reduced by disk crushers to one-inch diameter balls that can be handled in the tube-mills. Conveyors carry these inch lumps to 13 extremely large tube mills. Here they are comminuted and then pumped to slime collectors; then to agitator tanks. Cyaniding begins at the tube mills. The agitator tanks are among the largest ever made—22 by 45 feet. Then the product goes to storage tanks and filter plant. Classification follows in the usual way. The plant will handle 600,000 tons of ore annually.

World Production.—Statistics showing the world production of gold in 1922 were not available at the time this article was written, but the production in 1921 was estimated at 15,644,812 fine ounces as compared with the 1920 production of 16,205,029 fine ounces. The value of the gold produced in 1921 was placed at 65,886,925 pounds sterling or approximately \$329,000,000. The 1920 production had a value of \$334,987,610, and the 1919 production 17,695,037 fine ounces a value of \$365,788,796. Production in 1921 showed a decrease of 7,029,756 ounces compared with the output in 1915 when the high-water mark of 22,675,568 ounces was reached.

Generally gold is shipped from one country to another in the shape of bars which come in all sizes. Those withdrawn from the United States Assay Office are uniform and worth about

\$7,000 each. English gold generally is shipped in boxes which average \$30,000 or \$35,000 per box. South America, on the other hand sometimes ships gold in bars no larger than a pencil and often smaller.

According to the 'Statistical Abstract of the United States' issued by the Department of Commerce, the gold produced in the world since the discovery of America up to and including the year 1920 totaled 875,629,722 fine ounces valued at \$18,100,874,536. Of this amount about \$8,000,000,000 it was stated, was in circulation as money in the banks and public treasuries of the world—about \$2,000,000,000 of the \$8,000,000,000 being in the United States Treasury. The other \$10,000,000,000 worth, has been used up in the industrial arts or has disappeared in the 430 years which have elapsed since the keeping of gold statistics began.

Imports and Exports.—According to the Department of Commerce, the gold imported into the United States in 1922 totaled \$275,169,785 as compared with imports in 1921 of \$691,248,297 and imports in 1920 of \$417,068,273. Exports of gold in 1922 amounted to \$36,874,894 as compared with exports of \$23,891,377 in 1921 and exports of \$322,091,208 in 1920.

During the full year 1922, Great Britain imported gold from more than 17 separate countries. Out of the total imports of £34,543,591, the Transvaal sent £30,382,102; West Africa, £1,113,500; the United States, £472,360, and British India, £122,974. Importations from all other countries were considerably less than £100,000.

Exports of gold were made during the year to more than twelve separate countries. Out of the total shipments of £44,851,917, the United States took £26,632,645; British India, £12,949,424; France, £3,666,052; the Straits Settlements, £531,339, and Switzerland, £329,000.

GOLD COAST, a British west African colony situated on the Gulf of Guinea between the French Ivory Coast and Togoland. It has a coast line of 334 miles. With Ashanti and the protectorate it has an area of 80,000 square miles and a population in 1921 of 2,029,750. The chief towns are Accra (20,000); Secondee (8,000); and Cape Coast Castle (11,000). The Europeans in the colony number 2,345. In 1920 there were 19 government schools and 198 assisted schools under the control of various religious denominations. The attendance was 23,162 out of an enrollment of 28,580. The government expenditure on education in 1920 was \$247,426. The colony produces cocoa, palm oil, kola nuts, rubber, palm kernels, manganese and timber. The coast fisheries are increasing in importance, the dried product being sent to the interior. Gold is found in quartz and in alluvium. In 1920 the revenue of the colony amounted to \$18,608,860 and the expenditure to \$14,231,735. The revenue is derived from customs, railways, licenses, etc., and the chief expenditures are for public works, debt charges and the railways. The public debt in 1921 was \$36,720,590. The colony imports cotton goods, machinery, foodstuffs, building materials and fuel oil. Cocoa is the chief export, the value of this item in 1920 being \$50,281,490.

There is a government railway from Secondee to Coomassie, the capital of Ashanti, 168 miles, with branch lines aggregating 23 miles.

A line 85 miles in length has been constructed from Accra to Anyinam and in 1922 a line was constructed from Coomassie to Accra. The colony has 320 miles of improved roads and 2,100 miles of secondary roads. There are 60 telegraph offices and 2,762 miles of telegraph line. Since 1901 Ashanti has been under the governor of the Gold Coast, although the laws and ordinances of the latter do not apply in Ashanti. Ashanti has a population of 420,000. Cocoa and rubber are the chief products of the soil. Gold is found also, the output in 1920 being 70,719 ounces. There are thousands of acres of valuable forest lands. The governor of the Gold Coast in 1922 was Brig.-Gen. Sir F. G. Guggisberg and the colonial secretary was A. R. Slater.

GOLD RESERVES OF EUROPEAN COUNTRIES. See EUROPEAN COUNTRIES, NOTE CIRCULATION AND GOLD RESERVES OF.

GOLF. See SPORTS.

GONORRHEA. See PUBLIC HEALTH SERVICE, UNITED STATES.

GONZAGA UNIVERSITY, a Catholic educational institution for men, founded in 1887 and located at Spokane, Wash. In 1922-23 it had a faculty of 51 members, 725 students, and property valued at \$2,000,000. Rev. W. J. Fitzgerald, S.J., is president.

GOODING COLLEGE, a Methodist-Episcopal co-educational institution, founded in 1913 and located at Gooding, Idaho. In 1922-23 it had a faculty of 16 members, 140 students, property valued at \$150,000, and an income of \$38,000. Charles Wesley Tenney, is president.

GOSHEN COLLEGE, a Mennonite co-educational institution, founded in 1895 and located at Goshen, Ind. In 1922-23 it had a faculty of 13 members, 189 students, and property valued at \$136,800. Income figures not given for 1922-23 but for 1921-22 they were \$47,700. Daniel Kauffman, is president.

GOUCHER, John Franklin, American educator: b. Waynesburg, Pa., 7 June 1845; d. near Baltimore, Md., 19 July 1922. He received the degree of A.B. from Dickinson College in 1868, the degree of A.M. in 1872, the degree of D.D. in 1885 and the degree of LL.D. in 1899. In 1869 he entered the Methodist Episcopal ministry in the Baltimore Conference and was pastor of various Baltimore churches before he founded the Woman's College, of Baltimore (now Goucher College) in 1885, of which he was president until 1908 when he became president emeritus. He projected and built Harlem Park, Strawbridge and the new first churches in Baltimore; was president of the board of trustees of Centenary Bible Institute (now Morgan College) after 1883; was projector and benefactor of Princess Anne Training School; lifted the debt of Martin Missionary Institute, Frankfort-on-the-Main, Germany; projected and directed the organization of the Anglo-Japanese College, Tokyo, Japan, in 1882; founded the West China Mission and Korean Mission of the Methodist Episcopal Church; inspected the missions of the Methodist Episcopal Church in Italy in 1886, in Mexico in 1892, in India in 1897-98; in India, Java, China, Korea and

Japan, 1906-07; projected and supported a system of over 120 primary and secondary vernacular schools in India, 1883-1908; was member of the Board of Foreign Missions of the Methodist Episcopal Church (chairman, committee on education) after 1884; was a trustee of the University of Peking, China; president of the board of governors of West China Union University, Chentu; was delegate to general conferences of the Methodist Episcopal Church after 1888; fraternal delegate to the Methodist Episcopal Church, South, in 1894. He was a member of the business committee of the World Missionary Conference, Edin-Mission Field 1910-20; inspected educational institutions in Japan, Korea and China in 1910-11, 1913-15, 1919-21. He was a founder in 1902 and a member of the executive committee from that date until 1909 of the Young Peoples Missionary Movement; he founded the Pai Chai (the first Christian school in Korea), Seoul, in 1883. He was a member of the Joint Commission on Unification of American Methodism, 1912-20; president of the Maryland Bible Society, 1909. He was a trustee of Fukien Christian University, Foochow, China; of Chosen Christian College, Seoul, Korea; of Union Methodist Episcopal Theological Seminary, Seoul; a member of the Archaeological Institute of America; of the American Academy of Political and Social Science, the Anthropological Society; the American Association for the Advancement of Science, and various other organizations. He was decorated by the Emperor of Japan with the Order of the Rising Sun, third class, in 1920 and was awarded the Chia-ho Decoration, third class, by the President of China in 1921. Doctor Goucher was a life member of the Asiatic Society of Japan, an honorary life member of the Maryland Academy of Science, and president of the American Methodist Historical Society. He published 'Young People and the World's Evangelization,' 'The Sunday School and Missions,' 'Christianity and the United States' (1908), 'Growth in the Missionary Concept,' and 'Principles of Stewardship.'

GOUCHER COLLEGE, a non-sectarian educational institution for women, located in Baltimore, Md. It was founded as the Woman's College of Baltimore in 1885, by the late Dr. John F. Goucher, in honor of whom the name was changed about the time he retired as active president. In 1922-23 had a faculty of 90 members and a student enrollment of 986. For the same year, the value of the institution's property was placed at \$3,102,500, and its income at \$370,000. Its president is William W. Guth, Ph.D., LL.D.

GOULD, Sir Alfred Pearce, English surgeon: b. Norwich, England, 2 Jan. 1852; d. Ashburton, Devonshire, England, April 1922. He was educated at Amersham Hall School, at University College, London, at University College Medical School, and at the University of London. He was admitted to membership in the Royal College of Surgeons, England, in 1873, elected a fellow thereof in 1877, served on the council from 1900-16, and as acting vice-president 1908-10. He had an equally dis-

tinguished career at the University of London, where he obtained his degree of Master of Surgery in 1876, served as a member of the senate in 1900, was dean of the Faculty of Medicine from 1912 to 1916, and acted as vice-chancellor for the years 1916-17. He began his professional life in 1877 as assistant surgeon and lecturer on anatomy at the Westminster Hospital, posts which he resigned in 1882, on his election as assistant surgeon at the Middlesex Hospital. He remained attached to this hospital for the rest of his life, becoming surgeon, lecturer on surgery, and consulting surgeon. At the Royal Society of Medicine he served as treasurer, and was president of the clinical section. He also served as president of the Medical Society of London in 1902, and he was president of the Röntgen Society. In 1911 he was created a Knight Commander of the Royal Victorian Order and in 1919 was made a Commander of the Order of the British Empire. During the World War he acted as officer-in-command of the Third London General Hospital at Wandsworth with the rank of lieutenant-colonel in the Royal Army Medical Corps (Territorial forces). He published 'The Elements of Surgical Diagnosis'; 'The Evolution of Surgery'; 'Bradshaw Lecture on Surgery, Royal College of Surgeons of England' (1910); and was joint editor with Dr. Collins Warren of the 'International Text-Book of Surgery.' A large part of his professional career was devoted to a study of cancer.

GOULD, George Milbry, American physician, author and lecturer: b. Auburn, Me., 8 Nov. 1848; d. Atlantic City, N. J., 8 August 1922. He served as a drummer boy in the 63d Ohio volunteers, 1861-62, and enlisted in the 141st Ohio volunteers in 1864. He was educated at Ohio Wesleyan University, receiving the degree of A. B. in 1873 and the degree of A.M. in 1892 and at the Harvard Divinity School, 1873. He was graduated from the Jefferson Medical College, Philadelphia, in 1888, beginning his practice in that city in the same year as an eye specialist. From 1892 to 1894 he was ophthalmologist of the Philadelphia almshouse. He edited the *Medical News* from 1891 to 1895, the *Philadelphia Medical Journal* from 1898 to 1900 and *American Medicine* from 1901 to 1906. He was fellow of the College of Physicians of Philadelphia, and a member of the American Ophthalmological Society and of the American Academy of Medicine (president in 1895). He was one of the speakers at the Congress of Arts and Sciences at the Saint Louis Exposition in 1904. He received the first Doyné medal at the Ophthalmological Congress at Oxford, England. He was a member of the Phi Beta Kappa fraternity. He published: 'The Meaning and the Method of Life' (1893); 'Borderland Studies,' (2 vols. 1896-1905); 'An Autumn Singer' (poems) (1897); 'History of Jefferson College,' (2 vols. 1904); 'The Infinite Presence' (1910); 'Life and Letters of Edmund Clarence Stedman' (in collaboration), (2 vols. 1910); and many books on diseases of the eye as well as medical dictionaries.

GOVERNMENT, Cost of. The total cost of government in the United States in 1921

was \$8,460,011,596, according to statistics compiled by the National Budget Committee and published early in 1923. On the basis of 40,000,000 workers, whose gross income is \$60,000,000,000 a year, this means that the burden of government on every man and woman in business or professional life, including the 2,000,000 persons on the public pay rolls in nation, states, cities and counties, would be about \$220 annually. If they should contribute labor instead of dollars, every worker would give as his or her share more than seven weeks' labor every year.

As to the cost of the various forms of governmental activity, here is a summary for the calendar year 1921:

Cost of maintaining the Federal government	\$4,666,671,594
Cost of maintaining 48 State governments	1,008,540,232
Cost of maintaining 253 municipal governments in cities of more than 30,000 inhabitants	1,638,296,052
Cost of maintaining the municipal governments of all towns and cities of from 2500 to 30,000 population	431,287,059
Cost of maintaining municipal governments in 12,905 incorporated communities of less than 2500 population	123,147,687
Cost of maintaining county governments in the 48 States	592,068,972
Total cost of American government in 1921.	\$8,460,011,596

GOVERNMENT RESEARCH, Institute for. The Institute for Government Research is an organization with headquarters at Washington, D. C., created by a number of public-spirited men who believed that there should be some body whose duty it should be as a non-partisan, independent institution, to submit the problems of public administration, and particularly those of the national government, to scientific study for the purpose of making known those principles, practices and conditions which, if followed, would lead to a more efficient and economical conduct of public affairs. Its articles of incorporation thus state its purpose to be: "To conduct scientific investigations into the theory and practice of governmental administration, including inquiries into the form of organization and the manner of operations of Federal, State and local governmental bodies and offices in the United States of America; the powers, duties, limitations and qualifications of officers; the methods of administration employed; the character and cost of results obtained and the conditions affecting the efficiency and welfare of governmental officers and employees; to carry on such inquiries, directly or with the co-operation of governments, learned societies, institutions of learning, or other agencies and individuals, and to make public the results of its investigations; to maintain a library for the use of the society or its members and officers and those affiliated with its work; and to prosecute such other inquiries and perform such other services as may tend to the development and application of the principles of efficiency in governmental administration."

The institute was incorporated under the laws of the District of Columbia on 16 March 1916 and began active operations on 1 October of that year. Its board of trustees has been carefully selected with a view to securing repre-

sentation on it of those persons who stand highest in the public estimation for their active interest and work in the cause of promoting good government in this country. The present chairman of the board is Robert S. Brookings. Since its organization the work of the institute has been under the immediate direction of W. F. Willoughby. The institute is wholly supported by private donations. The activities of the institute fall into two general fields: (1) the prosecution of scientific investigations in the field of public administration; and (2) the direct assistance of governments, and particularly the national government, in working out and installing improved methods of administration.

The results of the scientific investigation work of the institute are given to the public in three series of publications: 'Principles of Public Administration,' 'Studies in Public Administration,' and 'Service Monographs of the United States Government.' The first series embraces volumes setting forth the principles that should be employed in handling the several branches of public administration, such as accounting and reporting, personnel administration, purchasing, and the like. The second includes volumes giving studies of particular administrative problems and systems such for example as 'The System of Financial Administration of Great Britain,' 'The Movement for Budgetary Reform in the States,' etc. The third series has for its purpose to give a detailed account of the history, activities and organization of each of the four score or more separate administrative services of the national government. Each service is handled in a separate volume, the method of treatment being uniform for all the services. The preparation of these monographs has been undertaken since the first essential of efficient administration is that full information shall be readily available regarding the activities engaged in, the organization and personnel employed in performing these activities, and all other pertinent facts regarding such services. These monographs thus furnish what may be termed a necessary tool of administration through the use of which members of the Congress may more intelligently perform their duties of legislating regarding and voting funds for the support of these services, administrators may more effectively perform their duties and the general public may keep itself informed regarding the work of governmental agencies.

In the second field of its activities the institute places at the disposal of members of the Congress, and administrative officers, the services of its director, and its highly expert staff in working out both the general and the more technical problems of administration. This assistance has been welcomed by these officers. In particular, it has been able to contribute to the promotion of such fundamental reforms as the introduction by the national government of a budget system, the reform of the methods of accounting and reporting, the establishment of a more satisfactory personnel system and the reorganization of the administrative departments and to the working out of the problems involved in putting these reforms into practical application. Following is a list of the publications of the insti-

tute to date, including those in press as well as those which have actually appeared:

Principles of Public Administration: (1) 'Principles of Government Accounting and Reporting,' by Francis Oakey; (2) 'Principles of Government Purchasing,' by A. G. Thomas; (3) 'Principles Governing the Retirement of Public Employees,' by Lewis Meriam; (4) 'Principles of Public Personnel Administration,' by A. W. Procter.

Studies in Public Administration: (1) 'The System of Financial Administration of Great Britain,' by W. F. Willoughby, W. W. Willoughby and S. M. Lindsay; (2) 'The Budget,' by Rene Stourm; (3) 'The Canadian Budgetary System,' by H. G. Villard and W. W. Willoughby; (4) 'The Problem of a National Budget,' by W. F. Willoughby; (5) 'The Movement for Budgetary Reform in the States,' by W. F. Willoughby; (6) 'Organized Efforts for the Improvement of Methods of Administration in the United States,' by G. A. Weber; (7) 'Teachers' Pension Systems in the United States,' by Paul Studensky; (8) 'The Federal Service: A Study of the System of Personnel Administration of the United States Government,' by Lewis Mayers; 'The Reorganization of the Administrative Branch of the National Government,' by W. F. Willoughby.

Service Monographs of the United States Government: 'Geological Survey,' 'Reclamation Service,' 'Bureau of Mines,' 'Alaskan Engineering Commission,' 'Tariff Commission,' 'Federal Board of Vocational Education,' 'Federal Trade Commission,' 'Steamboat Inspection Service,' 'Weather Bureau,' 'Public Health Service,' 'National Park Service,' 'Employees' Compensation Commission,' 'General Land Office,' 'Bureau of Education,' 'Bureau of Navigation,' 'Coast and Geodetic Survey,' 'Federal Power Commission,' 'Interstate Commerce Commission,' 'Railroad Labor Board,' 'Division of Conciliation,' 'Children's Bureau,' 'Women's Bureau,' 'Office of Supervising Architect,' 'Bureau of Pensions.'

W. F. WILLOUGHBY,

Director.

GRAECO-TURKISH WAR OF 1921-22.

See NEAR EAST; also PEACE AND ARBITRATION, INTERNATIONAL.

GRAIN, Artificial Culture of. Early in January 1923 the announcement was made that experiments carried on in the plant laboratories of the University of Minnesota, had demonstrated that grain crops can be brought to maturity and made to produce seeds of good quality entirely by cultivation under artificial light. In the experiments conducted at the institution referred to, electricity was substituted for sunlight. It was asserted that by the use of artificial illumination the germination of seeds can be speeded up two times over. Satisfactory experiments were carried on with wheat, oats, barley, rye, potatoes, lettuce, beans, peas, radishes, clover and various other seeds including the seeds of several ordinary weeds. Spring wheats were made to produce ripe seeds in 90 days of continuous lighting. The experiments were carried out in unheated basement rooms in the college buildings. Tungsten filament nitro-

gen filled lamps which burned for 24 hours each day were used. The experiments were conducted by Dr. R. B. Harvey, associate professor of plant pathology and botany in the university mentioned. See also **CHEMISTRY**, subsection, **ORGANIC AND BIOLOGICAL**.

GRAIN FUTURES ACT. See **AGRICULTURE IN THE UNITED STATES**, subsection **AGRICULTURAL LEGISLATION**.

GRAND ISLAND COLLEGE, a Baptist co-educational institution, founded in 1892 and located at Grand Island, Neb. In 1922–23 it had a faculty of 10 members, 227 students, property valued at \$121,624.14 and an income of \$58,944.01. John Mason Wells, A. M., is president.

GRANT, Nellie (MRS. FRANKLIN HATCH JONES), daughter of Gen. Ulysses S. Grant: b. Wistonwisch, Mo., 4 July 1853; d. Chicago, Ill., 30 Aug. 1922. She was born at the home of her grandfather, Colonel Dent, and spent the first years of her life in a log cabin built by her father. She went to live with her parents in the White House, where she immediately became a favorite and shared the national popularity of the President. In 1874 she was married to Algernon Sartoris, a member of the British diplomatic corps. Nellie Grant was one of the few "White House brides" and her wedding attracted great attention. Mr. and Mrs. Sartoris went to England and made their home at Cadogan. After the death of her husband, Mrs. Sartoris returned to the United States and joined her mother in Washington, D. C. By special act of Congress she was made a citizen of the United States, since by her marriage to a Britisher she had forfeited her American rights. On 4 July 1912, she became the wife of Franklin Hatch Jones, a Chicago lawyer and banker. Three months after her marriage she was attacked by an illness which made her an invalid and caused her to withdraw from all social activities. She left two children, Algernon Sartoris and Mrs. Frederick R. Scovel (Virginia Sartoris).

GRAPEFRUIT. See **PLANT INDUSTRY**, **BUREAU OF**.

GRAPES. The 1922 commercial grape crop of the United States, as determined by shipments, totaled 52,000 carloads, or 13,000 more cars than were moved during any preceding year. Allowing an average of 15 short tons to the car, the 1922 crop amounted to 1,560,000,000 pounds. California, with a total output of approximately 37,000 cars, not only led all States in the production of grapes by producing about two-thirds of the country's supply, but exceeded its 1921 crop by 4,000 cars and its 1917 crop by 24,000 cars. There was also a large gain in Eastern grapes during 1922, compared with the 1921 crop and with the average crop for the five years, 1917–21. New York, Michigan and Pennsylvania—the three leading grape-growing States of the East—about doubled their average shipments. New York's 1922 crop totaled 7,384 cars and exceeded its previous highest crop—that of 1920—by 1,305 cars. The crop of Michigan, which established a high record of 4,607 cars in 1920, amounted to 5,833 cars in 1922. The car shortage is said to have caused

rather serious losses to some growers in California. Many Western grapes were sent to large terminal markets in box cars and arrived in bad condition. Growers and shippers agree that it is hard to compute an average price per ton to cover both table and wine grapes but it is agreed that \$50 a ton is a fair estimate. That was the general price at New York loading points for Concords at the end of October. Earlier the same variety brought \$95 a ton, f. o. b. in New York and from \$70 to \$75 in Michigan. See also **HORTICULTURE**.

GRAPHITE. See under **UNITED STATES** subsection **MINERAL PRODUCTION**.

GRAY, George Buchanan, English Biblical scholar: b. Blandford, Dorset, England, 13 Jan. 1865; d. Oxford, England, 9 Nov. 1922. He was the son of the Rev. Benjamin Gray and was educated in private schools and at New College and University College, London, and afterwards studied at Mansfield College, Oxford and at Marburg. He took his London B. A. in 1886. At Oxford, where he was a non-collegiate student, he distinguished himself by obtaining a first class in the School of Semitic Studies, in 1891, and by winning the Pusey and Ellerton theological scholarship, the Junior Septuagint Prize and the junior and senior Kennicott scholarships. On taking his degree he joined the teaching staff at Mansfield and was in due course admitted to the Independent ministry. During this period he was examined in Oriental languages in the university. He was speaker's lecturer in Biblical studies from 1914 to 1919 and Grinfield lecturer on the Septuagint from 1919 to 1921. Oxford gave him the degree of D. Litt. and Aberdeen that of D. D. In 1898 he was elected a fellow of the German Oriental Society. To Doctor Gray the late Prof. S. R. Driver entrusted the completion of his great edition of the 'Book of Job.' This work, which was published in the summer of 1921, completed Doctor Gray's reputation as critic, commentator and philologist. His publications include articles in the 'Encyclopedia Biblica,' contributions on Semitic philology and Old Testament criticism to religious publications, as well as to the *Jewish Quarterly Review*, and the following books: 'Studies in Hebrew Proper Names' (1896); 'The Divine Discipline of Israel' (1900); 'Numbers' (1902); 'Numbers' (1903); 'Isaiah' (1911); 'A Critical Introduction to the Old Testament' (1913); and 'The Forms of Hebrew Poetry' (1915).

GREAT BRITAIN, or the United Kingdom of Great Britain and Ireland, a constitutional monarchy comprising the islands off western Europe commonly referred to as the British Isles. Strictly employed the term Great Britain denotes the larger island which comprises England, Scotland and Wales, but it is frequently used to include Ireland, the Isle of Man and the Channel Islands. Together with its overseas possessions and dependencies Great Britain forms the British empire. See also articles on England, Wales, Scotland, Ireland, Canada, Australia, New Zealand, South Africa and the minor possessions of Great Britain.

Area and Population.—According to the census of 19 June 1921 the population of the

several divisions of Great Britain was as follows:

DIVISIONS	Area, square miles	Population
England.....	50,874	35,678,530
Wales.....	7,466	2,206,712
Scotland.....	30,405	4,882,288
Ireland.....	32,586	*4,496,000
Isle of Man.....	227	60,238
Channel Islands.....	75	89,614
Total.....	121,633	47,307,601

* Estimate. No census taken in 1921.

The total number of births in England and Wales in 1920 was 957,994, or 25.5 per 1,000, and the very highest on record. The total number of births in 1921 was 849,045, of which 37,928 were illegitimate. Deaths the same year numbered 458,710. The proportion of male to female births in 1921 was 1,051 male to 1,000 female. In Scotland in 1921 there were 123,196 births of which 8,757 were illegitimate, and 66,311 deaths. The latest figures for Ireland (1920) show a total of 99,536 births of which 3,313 were illegitimate, 66,538 deaths and 26,826 marriages. In 1920, 352,429 British subjects departed for non-European countries and 84,355 aliens left Britain in the same year. British subjects to the number of 180,064 returned, as did also 103,641 aliens, leaving a balance outward from Great Britain of 153,079. Of these emigrants in 1920, 90,429 left Britain for the United States, 134,079 for British North America, 49,357 for Australia, 29,019 for British South Africa, 19,326 for India and Ceylon. Of the aliens, 61,224 traveled to the United States.

Religion.—The Protestant Episcopal is the established church of England. The King is the supreme governor of the church in England and nominates to archbishoprics and bishoprics and to other offices specified as the gift of the crown. The church in Wales was disestablished as from 31 March 1920. The Church of England has three archbishops, 39 bishops, and 36 suffragan bishops. This church claims 2,291,000 full members. The second largest body of Christians in England is the Roman Catholic with 1,900,000 adherents, one cardinal, four archbishops, and 17 bishops and 3,900 clergy. The third largest body is the Wesleyan Methodist with 484,000 full members closely followed by the Congregationalists with 451,000 members. Next in order come the Baptists with 380,000, the Primitive Methodists with 206,000, the Calvinistic Methodists with 187,000, and the United Methodists. In the Church of Scotland the ministers are all of equal rank, the church being Presbyterian. There are 84 presbyteries formed of parish groups and these are gathered in 16 synods. At the head of the church is the general assembly of 750 members partly clerical and partly lay. The Scottish church has 739,000 communicants, 1,800 ministers and 241,600 Sunday school pupils. The Roman Catholic church has in Scotland two archbishops, five bishops and 600 clergymen and 546,000 commu-

nicants. In Ireland the Roman Catholic faith has 3,242,670 communicants under four archbishops, 24 bishops and 3,830 clergymen. The second religious body in point of numbers is the Protestant Episcopalian with 576,611 communicants. The Presbyterians number 440,525, the Methodists 62,382 and the minor sects aggregate 68,031. The Church of Ireland (Episcopal) has two archbishops, 11 bishops and 1,500 clergymen.

Education.—In England and Wales there are 21,501 elementary schools with accommodation for 7,100,000 pupils. The total enrollment in 1922 was 5,917,854. The number of teachers the same year was 170,000. There are 59 schools for the blind, 50 for the deaf, 197 for mental defectives, 166 for physical defectives, six schools for epileptics, 50 so-called "certified efficient" schools, 60 poor law schools, 29 nursery schools and over 340 play centres. For the training of elementary teachers there are in England and Wales 88 training schools with accommodations for 13,578 students. Elementary education is free and compulsory between the ages of five and 14. In Scotland education is compulsory to the age of 15. In 1921 there were 3,123 primary schools in operation with an enrollment of 769,000 and an average attendance of 675,000. About 13,000 children are in intermediate schools. In the primary schools there are 24,604 teachers. Ireland has

UNIVERSITIES	Professors	Students
England:		
Oxford.....	102	4,265
Cambridge.....	167	5,975
Durham.....	182	1,479
London.....	1,253	8,178
Manchester.....	321	2,716
Birmingham.....	191	1,915
Liverpool.....	225	2,550
Sheffield.....	175	2,597
Bristol.....	217	1,200
Total (England).....	2,833	30,875
Scotland:		
Aberdeen.....	130	1,558
Edinburgh.....	287	4,451
Glasgow.....	225	4,750
St. Andrews.....	100	819
Total (Scotland).....	742	11,578
Wales.....	293	2,845
Ireland:		
National.....	221	1,900
Trinity.....	83	1,400
Belfast (Queens).....	75	1,345
Total (Ireland).....	379	4,645
Total (United Kingdom).....	4,247	49,943

8,002 primary schools with an average enrollment of 688,955 and an average attendance of 488,031. There are 7,590 principal teachers, 5,770 assistant teachers, and 2,380 junior assistant teachers in the Irish elementary schools system. There are seven training schools with accommodations for 1,195 students. The partition of the country under the government of Ireland Act of 1920 gave the Northern Irish

government its own Department of Education. In England and Wales there are at present 1,140 recognized secondary schools, with 308,000 full-time pupils, of whom 149,000 are girls. In addition to these there are 206 other schools of secondary grade recognized as efficient by the Board of Education but not included in the grant list. Scotland has 148 secondary schools in receipt of grants with an average student attendance of 45,965. Ireland's secondary schools are under the direction and management of the Intermediate Education Board. In 1921, 12,419 students presented themselves at the examinations conducted by the board. Higher education in the United Kingdom is provided for by the universities listed in the preceding table and by a number of technical and special schools.

As noted above, there are several special schools of higher instruction the chief of which are the university colleges at Nottingham, Exeter, Reading and Southampton; the agricultural colleges at Carlisle, Cirencester, Glasgow, Kingston, Wye, Ripley and Uckfield. The expenditure of the United Kingdom on education in 1919 was 53,102,000 pounds sterling, of which 43,674,000 represented the amount expended by England and Wales and 6,649,000 the amount expended by Scotland.

Agriculture.—The number of farms in England and Wales entirely or mainly owned by the people living on them increased from 48,665 in 1919 to 70,469 in 1921, according to agricultural statistics for 1921 published by the British Ministry of Agriculture and Fisheries. This is an increase of nearly 45 per cent in two years and gives some idea of the extent to which farms and holdings have been bought for occupation by those who were formerly either tenants or were not engaged in agriculture. The following table shows the number of holdings in England and Wales owned or mainly owned by the occupiers in 1919 and 1921 and the per cent of increase:

SIZE OF HOLDINGS	NUMBER		Per cent increase 1921 over 1919
	1919	1921	
1-5 acres.....	10,453	12,028	15.1
5-20 acres.....	13,786	18,635	35.2
20-50 acres.....	8,346	13,069	56.6
50-100 acres.....	6,380	10,769	68.8
100-150 acres.....	3,463	5,844	68.8
150-300 acres.....	4,216	7,170	70.1
Over 300 acres.....	2,021	2,954	46.2
Total.....	48,665	70,469	44.8

The total area under crops and grass in 1913 amounted to 27,129,000 acres of which 2,891,000 acres were owned by the occupiers. In 1921 the total area was 26,144,000 acres of which 5,232,000 were owned by the occupiers. Thus, while the proportion of the total area in England and Wales under crops and grass owned by occupiers in 1913 was only 10.7 per cent it was just 20 per cent in 1921, a change of considerable economic interest. In 1921 the cultivated area

included 8,902,301 acres planted to wheat, barley, oats, rye, beans and peas, 3,779,958 acres under green crops such as potatoes, turnips, cabbage, vetches, etc., 48,097 acres under flax, 100,751 acres under small fruits and 512,910 acres fallow. In the same year the number of horses was 2,137,200, 11,887,000 cattle, 23,749,500 sheep, and 3,116,500 swine. The yield of wheat in the United Kingdom in 1921 was 9,225,000 quarters, of barley 6,762,000 quarters, of oats 20,583,000 quarters, of potatoes 6,554,000 tons, of hay 9,383,000 tons. Thus the yield of the chief crops per acre was: of wheat 35.4 bushels, of barley 30.4 bushels, of oats 37.3 bushels, of potatoes 5.1 tons, of hay 1.7 tons.

Fisheries.—In 1921 the quantity of the fish caught and landed in the United Kingdom was 839,161 tons exclusive of salmon, and the value of the catch was 21,217,260 pounds sterling. The value of the shell-fish caught was 684,257 pounds sterling. There are 23,089 fishing boats registered of a total net tonnage of 336,234, of which 15,672 are sail vessels and 7,417 are steam vessels. About 66,801 men and boys are employed in the fishing industry and about 19,897 others are connected with it.

Mining.—The following table shows the mineral output of the United Kingdom for the year 1920, the last for which complete returns are available:

MINERAL	Quantity (tons)	Value at mines (pounds sterling)
Alum shale.....	5,539	623
Arsenical pyrites.....	1,178	7,212
Arsenic.....	1,997	110,873
Barium.....	64,150	207,218
Bauxite.....	11,020	3,443
Bog ore.....	2,179	1,127
Chalk.....	3,747,165	444,496
Chert, flint, etc.....	84,303	35,260
Chromite of iron.....	1,100	1,100
Clays and shale.....	11,030,418	3,648,213
Coal.....	229,532,081	396,872,423
Copper ore.....	275	9,649
Fluorapatite.....	54,683	57,242
Gold ore.....	1	150
Gravel and sand.....	2,757,052	532,236
Gypsum.....	286,978	196,353
Igneous rocks.....	5,620,691	2,692,913
Iron ore.....	12,706,895	9,956,820
Iron pyrites.....	6,659	8,303
Lead ore.....	15,399	325,174
Lignite.....	150	180
Limestone (excluding chalk).....	11,227,817	3,519,506
Manganese ore.....	12,875	26,991
Natural gas (cubic feet).....	95,000	29,768
Ochre, umber, etc.....	15,537	2,081,307
Oil shale.....	2,812,582	8,437
Petroleum.....	375	2,468,355
Salt.....	2,158,370	1,606,493
Sandstone.....	2,183,816	1,766,188
Slate.....	215,269	900
Soapstone.....	361	3,638
Strontia sulphur.....	4,183	783,154
Tin ore (dressed).....	4,858	94
Tungsten ores.....	94	1,800
Uranium ore.....	60	33,815
Zinc ore.....	5,064	
Total.....	*284,601,174	427,444,884

* 95,000 feet of natural gas.

In all mines there were employed in 1920, 1,270,000 workers. There were 3,349 mines in

operation and 1,003,000 persons worked underground and 258,000 males and 9,000 females worked above ground. A total of 68,000 persons were employed in quarries of which 5,479 were in operation. In 1921 there were mined 163,000,000 tons of coal, of which nearly 20 per cent was exported or sent out of the country as bunker coal.

Textiles.—From statistics published in the *Manchester Guardian* it appears that the textile mills of England consumed in the two-year period, 1921–22, the following amounts of raw material: 1,305,000,000 pounds of cotton, 711,000,000 pounds of wool, 63,000,000 pounds of flax, a total of 2,079,000,000 pounds of raw material used in the textile industry. The value of the textiles exported was: 290,200,000 pounds sterling of cotton goods, 95,050,000 pounds sterling of woollen goods and 17,000,000 pounds worth of linen, making a total of 402,350,000 pounds sterling. The wool clip of 1921 was 102,000,000 pounds and the flax crop 22,000,000 pounds.

Commerce.—The various commodities making up the principal articles of export and import for 1921 and 1922 are as follows:

IMPORTS		
	1921	1922
Food, drink and tobacco:		
Grain and flour.....	£77,299,902	£58,837,083
Feeding-stuffs for animals.....	3,686,090	2,812,330
Meat.....	85,180,151	61,241,333
Animals, living, for food.....	1,639,916	1,246,745
Other food and drink, non-dutiable.....	103,960,027	82,129,221
Other food and drink, dutiable.....	57,626,336	56,028,244
Tobacco.....	14,677,884	10,789,645
Total, Class 1.....	£344,070,306	£273,084,601
Raw materials and articles mainly unmanufactured:		
Coal.....	£11,463,366	£20
Other non-metallic mining and quarry products, etc.	4,349,150	3,021,241
Iron ore and scrap.....	3,730,615	2,657,161
Non-ferrous metaliferous ore and scrap.....	4,954,339	3,708,989
Wood and timber.....	15,310,990	16,311,192
Raw cotton and cotton waste.....	36,184,709	45,760,419
Wool, raw, and waste and woollen rags.....	26,931,248	40,969,968
Silk, raw, knubs and noils.....	442,900	1,131,869
Other textile materials.....	6,451,332	5,649,151
Oil seeds, nuts, oils, fats, resins, gums.....	19,511,526	22,150,347
Hides and skins, undressed.....	4,969,662	8,141,192
Papermaking materials.....	6,508,794	4,778,814
Rubber.....	7,365,334	3,991,934
Miscellaneous raw materials and articles mainly unmanufactured.....	3,947,485	4,853,872
Total, Class 2.....	£152,127,450	£163,121,169
Articles wholly or mainly manufactured:		
Coke and manufactured fuel.....	210,976	16,817
Earthenware, glass, abrasives, etc.....	4,182,887	3,939,126
Iron and steel and manufactures thereof.....	11,289,570	5,798,549
Non-ferrous metals, manufactures thereof.....	11,289,570	9,980,733
Cutlery, hardware, implements and instruments.....	4,166,591	3,506,622
Electrical goods and apparatus.....	1,353,522	725,477
Machinery.....	7,851,672	4,652,127
Manufactures of wood and timber.....	3,360,068	2,226,812
Cotton yarns and manufactures.....	3,210,870	3,888,231

IMPORTS — (Continued)		
	1921	1922
Woolen and worsted yarns and manufactures.....	£5,347,222	£5,110,341
Silk and silk manufactures.....	11,830,713	12,392,424
Manufactures of other textile materials.....	4,767,079	5,995,545
Apparel.....	5,165,773	8,006,647
Chemicals, drugs, dyes and colors.....	8,239,803	6,186,112
Oils, fats and resins, manufactured.....	38,623,562	25,504,794
Leather and manufactures thereof.....	4,160,535	6,205,192
Paper and cardboard.....	6,707,342	6,469,270
Vehicles (including locomotives, ships and aircraft).....	4,754,440	8,965,310
Rubber manufactures.....	2,403,152	3,469,733
Miscellaneous articles, mainly or wholly manufactured.....	11,206,167	13,068,395
Total, Class 3.....	£154,051,667	£131,198,257
Animals, not for food.....	£216,293	£198,424
Parcel post, non-dutiable articles.....	1,811,152	1,367,708
Total.....	£652,276,868	£568,970,159

EXPORTS		
	1921	1922
Food, drink and tobacco:		
Grain and flour.....	£2,140,347	£1,865,061
Feeding stuffs for animals.....	672,746	1,104,348
Meat.....	431,018	562,203
Animals, living, for food.....	28,199	15,379
Other food and drink.....	14,611,233	13,983,867
Tobacco.....	2,911,822	3,260,029
Total, Class 1.....	£20,795,365	£20,790,887
Raw materials and articles mainly unmanufactured:		
Coal.....	£16,993,209	£36,427,301
Other non-metallic mining and quarry products, etc.	580,350	977,198
Iron ore and scrap.....	89,354	373,305
Non-ferrous metaliferous ores and scrap.....	380,725	3,949,886
Wood and timber.....	244,007	200,256
Raw cotton and cotton waste.....	281,328	574,457
Wool, raw, and waste, and woollen rags.....	2,508,128	4,333,817
Silk, raw, knubs and noils.....	11,619	42,549
Other textile materials.....	343,107	547,410
Oil seeds, nuts, oils, fats, resins, gums.....	2,762,791	3,254,034
Hides and skins, undressed.....	828,310	1,043,176
Paper making materials.....	368,122	671,944
Rubber.....	74,925	56,199
Miscellaneous raw materials and articles mainly unmanufactured.....	2,187,353	1,760,281
Total, Class 2.....	£27,653,328	£54,211,813
Articles wholly or mainly manufactured:		
Coal and manufactured fuel.....	£1,618,511	£2,666,595
Earthenware, glass, abrasives, etc.....	7,385,427	6,415,329
Iron and steel and manufactures thereof.....	41,004,607	35,015,731
Non-ferrous metals and manufactures thereof.....	7,229,835	6,705,746
Cutlery, hardware, implements and instruments.....	5,924,999	3,694,067
Electrical goods and apparatus.....	8,828,886	4,243,449
Machinery.....	47,251,107	29,164,727
Manufactures of wood and timber.....	1,052,793	708,577
Cotton yarns and manufactures.....	104,531,355	108,413,657
Woolen and worsted yarns and manufactures.....	35,652,879	33,854,246
Silk and silk manufactures.....	1,406,336	1,336,284
Manufactures of other textile materials.....	10,926,725	12,891,121
Apparel.....	11,477,836	11,873,090

EXPORTS—(Continued)	1921	1922
Chemicals, drugs, dyes and colors.....	£12,104,990	£11,860,201
Oils, fats and resins, manufactured.....	2,831,081	3,331,884
Leather and manufactures thereof.....	2,466,998	2,841,034
Paper and cardboard.....	5,085,385	3,528,415
Vehicles (including locomotives, ships and aircraft).....	29,949,123	33,125,089
Rubber manufactures.....	2,858,914	2,983,665
Miscellaneous articles, mainly or wholly manufactured.....	16,346,754	15,350,853
Total, Class 3.....	£355,934,541	£330,003,760
Animals, not for food.....	£2,152,818	£856,579
Parcel post.....	5,531,374	6,317,392
Total.....	£412,067,426	£412,180,431

The trade for the calendar year ended 31 Dec. 1922 compares as follows with the same period in 1921 and 1920:

	1922	1921	1920
Exports, British products— £720,493,394	£703,196,282	£1,334,469,269	
Re-exports, foreign goods— 103,768,805	107,052,072	222,753,331	
Total exports— £824,262,199	£810,248,354	£1,557,222,600	
Imports— 1,003,941,435	1,086,687,213	1,932,648,881	
Excess of imports— £179,679,236	£276,438,859	£375,426,281	

Finance.—The chief sources of revenue are the customs, dues, the excise, motor vehicle duties, estate and inheritance taxes, stamps, the land and house taxes, property and income tax and the super-tax, the postal, telegraph and telephone services, and crown lands. The chief sources of expenditure are the several debt services, the post-office, army and navy, and the civil services. A statement of the British treasury at the beginning of the fiscal year 1922–23 showed that the external debt of the British government had been reduced from 1,364,850,000 pounds at that date in 1919 to 1,278,714,000 in 1920, to 1,161,563,000 in 1921, and to 1,087,150,915 (at par \$5,294,424,965) in 1922. Twenty-eight separate loans of various dates and to various countries, most of them issued during the war, are scheduled as having already been repaid in full. The war debt to the United States treasury, which was scheduled, including interest, at £865,652,000 on 1 March 1920, had been subsequently reduced to 856,093,000 at the end of March 1922. The British treasury return, made public 9 Nov. 1922, puts Great Britain's total debt on 1 April 1922 at £7,742,526,147 (roughly \$34,067,115,058). The lowest figures since 1875, when the debt was £767,268,559 (\$3,365,081,648) was in 1899, when it was £635,393,734 (\$2,795,732,429). The debt in 1914 was £707,654,110 (\$8,113,678,184). The highest figure was in 1920, when it was £7,878,607,166 (\$34,555,871,519).

On war pensions and allowances, the annual expenditure exceeds £100,000,000 (half a billion dollars). Despite this heavy outlay, Great Britain has balanced her budget. In the financial year, ending 31 March 1922,

The receipts were.....	£1,124,880,000
And the expenditures.....	1,079,187,000
Showing a surplus.....	£45,693,000

The actual reduction of debt was:

By surplus.....	£45,693,000
By sinking fund.....	25,000,000
By saving on civil contingencies.....	17,773,000
Total.....	£88,466,000

The estimates for the current year, 1922–23, are:

Revenue.....	£910,775,000
Expenditure.....	910,069,000
Surplus.....	£706,000

This means that, according to estimates, the budget would merely balance, leaving nothing for reduction of debt. For the nine months ending 31 December, the accounts showed:

Revenue.....	£585,562,730
Expenditure.....	572,634,460
Surplus.....	£12,928,270

This result shows an improvement over the estimates. In sterling exchange, there has been a great improvement. On 1 Jan. 1922, it stood at 4.21 dollars to the £ compared with 4.85 dollars normal. On 31 December, the quotation was 4.63.

The budget introduced in the House of Commons, 15 April 1923, showed a surplus of £101,515,848 for the fiscal year ended 31 March 1923. Revenues for the year totaled £914,012,452; expenditures, £812,496,604. The budget estimates for the year 1923–24 were: Revenue, £818,500,000; expenditures, £816,616,000; estimated surplus, £1,884,000.

Communications.—At the beginning of 1921 there were 23,734 miles of railways open for traffic in the United Kingdom. Of this mileage, England, Scotland and Wales possessed 20,292 miles, and Ireland 3,442 miles. In the year named the total paid-up capital of all lines amounted to 1,327,500,000 pounds sterling, the number of passengers carried exclusive of season ticket holders was 1,604,500,000, amount of freight carried was 324,000,000 tons, gross receipts amounted to 314,766,000, operating expenses totalled 261,755,000 pounds, leaving a net income of 53,011,000 pounds. The proportion of operating expenditures to gross receipts was 98 per cent. In the same year there were in the United Kingdom 2,729 miles of light railways and tramways in operation, of which 2,647 miles were operated by electricity. The total number of passengers carried in 1920 was 4,987,526,000.

As a result of experience during the World War when all railroads were taken over by the government the principal railroad managers of Great Britain decided that an amalgamation of the country's railroads was desirable. War-time experience showed that there were too many roads in certain places, involving a great deal of duplication and wasteful competition,

which, by exhausting the resources, hindered much-needed improvements. The Ministry of Transport prepared an amalgamation scheme which, with but two important changes, passed through Parliament in 1921. One modification of the plan was the exclusion of the London local lines and the other the division of the Scottish lines between eastern and western groups instead of a single group by themselves. The amalgamation, which went into effect 1 Jan. 1923, eliminates the old familiar names, except the Great Western, and establishes four big systems. On 29 Dec. 1922 the *New York Times* outlined the amalgamation plan as follows: The four groups are known as the Southern Railway, the Great Western Railway, the London, Midland and Northern Railway and the London and Northeastern Railway. The Southern Railway includes the old London and Southwestern, the London, Brighton and South Coast and the Southeastern and Chatham. The Great Western adds to its original lines all the Cambrian railways in Wales. The London, Midland and Northern represents the old North-western, the Midland, the Lancashire and Yorkshire, the North Staffordshire, the Furness, the Caledonian, the Highland and the Glasgow and Southwestern Railway Companies. The London and Northeastern includes the former Great Central, the Great Eastern, the Great Northern, the Hull and Barnsley, the North British and the Great North of Scotland lines. In this way there is one great system for each of the four quarters of Great Britain, although, as the properties held by the present companies are not redistributed, the lines of the new amalgamations in some places invade the territory of rivals. Thus, although theoretically speaking, the London and Northeastern is to occupy itself entirely with the eastern districts, one of its branches runs clear across England from Sheffield to Manchester and Liverpool, and another cuts across Scotland from Edinburgh to Glasgow and goes up the northwest coast to Mallaig and Arisaig. The size of the new units may be judged from the fact that the London and Northeastern will operate 7,000 miles and 2,500 stations and freight depots and is expected to carry 300,000,000 passengers and 183,000,000 tons of freight, including minerals, per annum. To regulate tariffs of the new group railroads a rates tribunal has been set up. It consists of three men, all experienced in railroad and shipping matters, Sir Francis Gore Browne, K.C., president; W. A. Jepson and George Cooper Lockett. The new companies must submit their schedules to this board and it has power to lay down general principles the companies must observe and to order changes.

Under the old system railroad rates in the United Kingdom were subject to maxima laid down by statute. The companies were at liberty to charge whatever they pleased within these maxima. But now a different principle is to prevail. The companies are to aim at earning as much money as the old concerns cleared in 1913, the last normal year before the war, together with 5 per cent on capital expenditure while under government control and an additional allowance upon any capital expenditure made before 1913 which can be shown not to

have reached its full, fair earning power in 1913. This is styled the railroads' "standard revenue." Consequently the companies know what burdens their railroads are to bear, and they are to portion it out among different classes of merchandise so that each supports its reasonable share. Rate schedules are to be subject to periodical review by the rates tribunal, and it is also provided that, as it is impossible to consider existing conditions as stable, there is to be an annual revision for the next three years. There would, of course, be a risk, if the "standard revenue" were determined absolutely, that the companies would lose all spur to initiative and would do nothing to increase their efficiency. It therefore is arranged that if the rates yield more than the standard revenue the companies shall be permitted to retain 20 per cent of the excess, and only the other 80 per cent shall be used to reduce rates. This principle, it has been stated officially, has been accepted as satisfactory both by the railroad companies and by the Federation of British Industries and other representative bodies of commercial men. There was, of course, nothing to prevent the old railways forming these new groupings on their own initiative, but it could have been done only by long, complicated negotiations and so the government decided to seek Parliamentary power to make such amalgamations compulsory. The details, however, were left as far as possible to the old managements to work out, though they had to be submitted for approval to a special amalgamation tribunal consisting of Sir Henry Babington Smith, G.B.E., president; Sir William Plender G.B.E., and George John Talbot, K.C.

One of the principal tasks which came before this tribunal was the exchange of securities of the old companies for those of the new group companies. This was extremely complicated, as the capitalization of the old companies not only was divided into securities of several different ranks, but also included stock and debentures of one-time small railroads which already had been absorbed into the old systems. Generally the conversion of securities was so devised as to give to stockholders amounts of capital in the new concerns, which will bring them in the same annual incomes that they have been enjoying. Thus, for every 6 per cent £100 preference share of the old Great Central Railway, £150 of 4 per cent second guaranteed stock in the new London and Northeastern Company has been given. To facilitate this the conversion act provides that if there is any difficulty found in winding up any of the old railway companies the amalgamation tribunal may give permission for its being carried on for five years, or even longer, merely as a holding company under its old name, but without any of the privileges or duties of a railroad corporation. The declared object of this amalgamation act is to promote co-operation and to limit uneconomic competition. Larger groups, it is contended, will provide more efficient services than the old individual lines and will be able to effect great economies in the overhead expenses of management. They will be able, because of the large areas they cover, to offer to the public much greater facilities for travel and carriage of

freight and shippers will get important advantages through reduction in the number of times their consignments have to be handled. Moreover, the amalgamation has been so devised as to hold out to the new groups strong inducements to develop the territories they serve.

In the United Kingdom there are 4,673 miles of canals, of which 3,641 miles are in England, 848 in Ireland and 184 in Scotland. The total tonnages originating in the chief canals of the United Kingdom in 1921 was 11,780,000 tons. In addition there are the tonnages of the Thames above Teddington and that of the Caledonian canal aggregating about 85,000 tons. In the United Kingdom there were in 1922, 23,650 post-offices staffed by 227,308 persons. In 1922 the postal system carried 3,350,000,000 letters, 500,000,000 post cards, 1,150,000,000 printed papers, and 190,000,000 newspapers, 137,000,000 parcels and 80,000,000 telegrams. In 1921 a total of 16,846,000 money orders was issued in the amount of 118,843,000 pounds. In the same year the postal orders issued totaled 101,617,000 the value of which was 37,368,000 pounds sterling. At the beginning of the fiscal year 1922-23 the telegram mileage of the United Kingdom was 283,461, with 4,065,780 miles of wire, of which 2,997,992 miles are underground and 1,046,379 are aerial and 21,409 are subaqueous. The post-office operates 16 wireless stations. There are 1,188 telephone exchanges with 7,197 circuits containing 472,400 miles of wire in the trunk-line service while London had 82 exchanges in 1922 with 1,320,300 miles of wire and 324,721 instruments. The provincial exchanges are 3,180 in number with 1,730,664 miles of wire and 637,280 instruments.

Army.—In the United Kingdom the land forces consist of the regular army, the territorial army and the reserve forces. The regular army serve both at home and in the overseas dominions. At present time service in the regular army is for 12 years, of which from three to nine years are spent with the colors and the remainder in the army reserve. The land forces are under an Army Council over which presides the Secretary of State for War and composed of the Chief of the Imperial Staff, the Deputy Chief, the Adjutant-General, the Quartermaster-General, the Master-General of Ordnance, the Parliament Under-Secretary of State, who is Vice President of the Council, and the two permanent Secretaries of the War Office. The chief military educational establishments are the Royal Military Academy, the Royal Military College, and the Staff College. The expenditure for the military establishment for the year 1922 was 106,315,000 pounds sterling. The total personnel in 1922 was 341,000, of whom 277,023 were British troops and 84,200 were Indian and colonial troops. These men were distributed as follows: In India, 75,896; home garrison, 134,769; in Constantinople, Egypt, Palestine and Mesopotamia, 105,250, including some Indian troops; on the Rhine and in the plebiscite areas, 14,500.

Navy.—Eight of the early ships of the dreadnought class and all pre-dreadnoughts have been removed from the lists and all other classes have been reduced both in the interest of economy and because of the Washington Conference

on Disarmament. The class of armored cruisers no longer exists. Capital ships are no longer classed as either dreadnought or pre-dreadnought but as pre-Jutland and post-Jutland. The *Hood* is the only vessel of the latter type. The strength of the British navy prior to the carrying out of the provisions of the Washington Conference is indicated by the following summary:

Dreadnoughts.....	24
Pre-dreadnoughts.....	
Armored cruisers.....	
Light cruisers.....	68
Destroyers.....	205
Torpedo boats.....	47
Submarines.....	70

There are in addition several depot ships, store ships, repair ships, mine layers and sweepers and several seaplane carriers. The personnel of the navy totalled 121,600 in 1922-23. In December 1922 it was announced that two 35,000-ton battleships would be built and their keels laid before the close of the year in accord with the terms of the Washington treaty.

History.—In Great Britain, the year 1922 was marked by the collapse of the Coalition over which, for six years, David Lloyd George had presided as Prime Minister. A straight Conservative government, under Andrew Bonar Law, was called to power. When the year opened, anyone who studied Mr. Lloyd George's special organ, *The Daily Chronicle*, and other newspapers could gather that it was his desire to dissolve Parliament in February and appeal to the country as himself, the head of the government in power. Indeed, Lloyd George, early in January, discussed this strategy with Austen Chamberlain, his most responsible Conservative colleague. Had such a general election then occurred—that is, in the early spring—there is hardly a doubt that Lloyd George would have secured a further lease of office. The Coalition would have been perpetuated as a National party, representing middle opinion and strong enough to resist Toryism on the extreme right and Labor on the extreme left. In such a plan for an immediate election Lloyd George would have been able to count upon the more or less willing support of Austen Chamberlain, Viscount Birkenhead (the Lord Chancellor), Earl Balfour (formerly Prime Minister), and Sir Robert Horne (the Chancellor of the Exchequer). But, from the first, Sir George Younger, the chief whip of the Conservative party, openly protested against the foreshadowed strategy. He declared that the Conservative party must retain its separate existence and that the Coalition, before appealing to the country, must reform the House of Lords. What Sir George Younger meant by House of Lords' Reform was a repeal of the Parliament Act, passed in the year 1911, whereby the veto of the peers was severely restricted. To a restoration of that veto, David Lloyd George and the Coalition Liberals would not agree. With the Conservative caucus against him, Lloyd George dared not risk an election in February and the dissolution was thus postponed until the autumn. To outward appearances, Lloyd George was still strongly entrenched in the con-

fidence of the House of Commons. On 3 April the majority that endorsed his policy at Genoa was 372 to 94. It is true that on 16 May the government was defeated by 151 votes to 148 over a small question of taxing teachers' pensions, but on the 25th a vote of confidence was carried by 233 to 26. There was, however, a certain restlessness in the country which was reflected in by elections, many of them resulting adversely to the government. Behind the scenes, the Conservative Die-Hards, led by Sir George Younger, only awaited their opportunity to break the Coalition, drive out Lloyd George and his Liberal friends and instal a Conservative of their own choice as Prime Minister. Of the Big Four, who negotiated the Treaty of Versailles—Woodrow Wilson, Clemenceau, Orlando and Lloyd George—only Lloyd George remained in power. While it was agreed that he did much to win the war, that war was now over, except as a source of bitter recriminations, in which generals and editors, correspondents and diarists spilt ink against one another as freely as blood had been shed, only a year or two before. The Asquith Liberals could not forgive Lloyd George for betraying—as they regarded it—their leader, their party and their cause. They alleged that he had squandered British lives and British money in futile campaigns against Russia and in the Mesopotamian adventure. They attacked the Safeguarding of Industries Act as a surrender of free trade. They enlarged upon what they considered to be the inconsistent policy of the government in Ireland, where the reprisals, inflicted by the Black-and-Tans were so quickly followed by the grant of a Free State. While in terms, they did not alter their opinion of the justice and inevitability of the war, they joined with labor, including pacifist labor, in deploring the terms of peace, which was, in fact, no peace at all, and they accused Lloyd George of a lukewarm feeling towards the League of Nations. During the summer, criticisms of every kind accumulated, some of them justified, others merely emotional.

What brought things to a head was the defeat of the Greeks by the Kemalists Turks, with threat to Constantinople. On 16 September a manifesto, the authorship of which was attributed to Winston Churchill, appeared in the press. By this manifesto, it appeared that war against Turkey was contemplated—a war in which Great Britain would fight alone. The country was already taxed to the limit and any idea of such a commitment caused the gravest alarm. Labor made it clear that, if hostilities were attempted, there would be trouble among the workers and the more extreme organization of that party passed a resolution denouncing Lloyd George "as a public danger to the peace of the world." Lord Curzon was sent to Paris in order to negotiate with M. Poincaré a line of common action in the Near East. Powerful sections of the press, including the Northcliffe newspapers, clamored for a change of administration. The decisive word lay with the Conservatives in the House of Commons. On 9 October the party met at the historic Carlton Club. By 186 votes to 89, a resolution was carried, declaring that the party "while willing to co-

operate with Coalition Liberals, fights the election as an independent party with its own leader and its own program." It was Bonar Law's speech in support of this resolution that carried the day. What ultimately determined the verdict was a by-election at Newport, Wales, in which—the day before—the Conservative had headed the poll against a split Liberal and Labor vote. It seemed possible to the Conservatives to carry the country without Liberal assistance. On the afternoon of that party meeting, David Lloyd George resigned. With resignations by his colleagues filling his letter-box, he had no choice. The King sent for Andrew Bonar Law (q.v.), who undertook to form a government. The cabinet was as follows:

Office	Old	New
Prime Minister and First Lord of Treasury	D. Lloyd George	A. Bonar Law
Lord Privy Seal	Austen Chamberlain	Vacant
Lord President of Council	Earl Balfour	Marquis of Salisbury
Lord Chancellor	Viscount Birkenhead	Viscount Cave
Chancellor of Exchequer	Sir R. Horne	Stanley Baldwin
Home Secretary	Edward Shortt	W. C. Bridgeman
Foreign Secretary	Marquis Curzon	Marquis Curzon
Colonial Secretary	Winston Churchill	Duke of Devonshire
Secretary for India	Viscount Peel	Viscount Peel
Secretary for War	Sir L. Worthington Evans	Earl of Derby
First Lord of Admiralty	Lord Lee of Fareham	L. C. M. S. Amery
Secretary for Scotland	Vacant	Viscount Novar
President Board of Trade	Stanley Baldwin	Sir Philip Lloyd-Graeme
Minister of Health	Sir A. Mond	Sir Arthur Griffith Boscawen
Minister of Agriculture	Sir A. Griffith Boscawen	Sir Robert Sanders
President Board of Education	H. A. L. Fisher	E. F. L. Wood
Minister of Labor	Dr. J. T. Macnamara	Sir Montagu Barlow

On 15 Nov. 1922 the general election was held. With the Irish Free State no longer represented in the Imperial Parliament, the House of Commons was reduced to 615 members, of whom 602 represented Great Britain. Of these, 47 obtained their seats without opposition, namely, 32 Conservatives, four Labor, five Asquith or Independent Liberals, five Lloyd George or National Liberals, and one Independent. Of the 555 contested seats, the Conservatives won 305, Labor 140, Independent Liberals 55, National Liberals 50 and Independents five. The final result was thus:

Conservatives	337
Other parties:	
Labor	144
Independent Liberals	60
National Liberals	55
Independents	6
	<hr/> 265
Conservative majority in Great Britain over all other parties	<hr/> 72

In the 13 Ulster constituencies, the Conservatives won 11 seats against one National and one Sinn Féin. This brought up the Conservative majority to 81. On 23 November, in a te-

division, the figures were: Ministerial, 239; Opposition, 135; majority, 104. The votes recorded in Great Britain were:

Conservative.....	5,474,533
Labor.....	4,312,030
Independent Liberal.....	2,651,187
National Liberal.....	1,428,478
Independents.....	302,244
	<hr/> 14,178,472 <hr/>

These statistics created a deep impression. First, it was clear that the Conservatives, despite their majority, had polled few more than one-third of the votes recorded. Secondly, the enormous poll of Labor came as a startling surprise. And, thirdly, the feud within Liberalism, between "Independents" and "Nationals," was displayed in all its folly. Owing to split votes in three-corner contests, it was calculated that while on the average it took 17,900 votes to elect a Conservative, it took 28,500 votes to elect a National Liberal; 30,800 to elect a Labor member, and 48,000 to elect an Independent Liberal. The new Parliament, therefore, could not be regarded as accurately representative of parties in the country, and a demand immediately arose—voiced by Lloyd George himself—for some kind of second ballot or proportional representation.

The total number of candidates was 1,419; and 176 members, including Bonar Law himself, were returned by a minority vote. They were: Conservatives, 95; Labor, 54; Independent Liberals, 17; and National Liberals, 10. Among the candidates were 32 women, as follows: Conservatives, 5; Labor, 9; Independent Liberals, 13; National Liberals, 3; Independents, 20. Many of these women were well known throughout the country. Not one of them was returned, save the two members already in the House, namely, Lady Astor and Mrs. Wintringham, whose poll was as follows:

Plymouth: Sutton (Electorate, 37,696):	
Lady Astor (Conservative).....	13,924
Capt. G. W. Brennan (Labor).....	10,831
Dr. H. W. Bayly (Independent Conservative).....	4,643
Majority.....	<hr/> 3,093 <hr/>
Lincolnshire, South (Electorate, 28,468):	
Mrs. Wintringham (Independent Liberal).....	11,609
Sir Alan Hutchings (Conservative).....	10,726
Majority.....	<hr/> 883 <hr/>

The reason why an independent Conservative was put up against Lady Astor, appears to have been a dissatisfaction with her outspoken advocacy of temperance. While she is not herself urging so drastic a policy as Prohibition for Great Britain, her personal abstinence from alcoholic liquor is well known, and her general attitude on the subject is not approved in the Conservative Party, of which the chief whip, Sir George Younger is a brewer. The success of the party at the polls was largely due to the support of 100,000 public houses. In fighting the election, Bonar Law did not pretend to put forward any program. He quietly set aside a positive Conservative policy, which would have included tariffs and a new fight for the House of Lords. His "slogan" recalled the famous word

"normalcy," coined by President Harding in 1920. Bonar Law promised "tranquility." He suggested a withdrawal from too active responsibilities in Mesopotamia and the Near East. His whole attitude favored *laissez faire*. As Prime Minister, he would not himself interfere, as Lloyd George had done with the departments. Lord Curzon should manage foreign policy, and the unemployed—when they called on him—were told that they must be content with interviewing Sir Montague Barlow, the Minister of Labor.

But on one matter of capital importance, the government was compelled to take an immediate decision. As long ago as 22 May 1922, Bonar Law, then speaking as a private member out of office, had warned France against any weakening of the Entente, adding that if she acted independently in attempting to carry out the Treaty of Versailles, she would be playing into the hands of Germany. In January 1923, Bonar Law, as Prime Minister, visited Paris and conferred with Poincaré over reparations. The differences between the two statesmen were irreconcilable. Bonar Law wished to give Germany time to build up her economic strength and so to enable her to pay something, at any rate, of her liabilities under the Treaty of Versailles. Poincaré was for declaring an immediate default, to be followed by the military occupation of the Ruhr valley. The negotiations between the Prime Ministers were brief and friendly, but final. The new year had scarcely opened before Bonar Law bade Poincaré a courteous farewell and the British Entente with France, developed 20 years before by Lord Lansdowne, came to an end.

The new House of Commons presented many interesting changes. The absence of the Irish Nationalists was confirmed. And Labor, having the largest party, other than the Conservatives, became the official Opposition. This meant that the historic Liberal Party, led by Palmerston, Gladstone, Rosebery, Bannerman and Asquith was relegated to a third place in the landscape, and that in the event of a Ministerial defeat, it would be for the Labor leader and not for the Liberal leader that the King would send to form an alternative government. Lloyd George recognized the position by taking his seat "below the gangway"—the same familiar corner seat which he occupied before 1905, as a private member who had yet to taste the sweets of office. Asquith was a somewhat pathetic figure. His majority at Paisley had been reduced to 316 in an electorate of 38,000 and undoubtedly a contributory cause was the irresponsible reminiscences published and lectures delivered by "Margot." Without formally deposing their veteran leader, the Independent Liberals chose Sir John Simon, perhaps the most successful lawyer of the day, to be their spokesman. The Labor Party is not perhaps so formidable in fact as it is in name. It contains many intellectuals like Sidney Webb and also a number of Liberals, usually with private means, who have become impatient over the negative prospects of that party under the Asquith leadership. The only Communist in the House is J. T. W. Newbold who sits for the Motherwell division of Lancashire where the mining vote predominates.

The declared policy of the Labor Party may be summarized: Free Trade, an avoidance of diplomatic and military commitments abroad, housing, the national ownership of mines and railways, and a levy on capital.

The party includes many members who, like Philip Snowden, opposed the war. Their return from the political wilderness may be interpreted as meaning that public opinion among the workers is gravely dissatisfied with the Treaty of Versailles and the failure to establish a real reconciliation in Europe. How complete has been the change of sentiment towards Germany may be estimated by the choice of a leader on the part of labor. The previous leader was J. R. Clynes, a trade unionist and cotton worker, who had supported the war, served in the Coalition as food controller and been created a Privy Councillor. At a party meeting, Clynes was, however, defeated 61 votes to 56, 21 November, his chosen successor being James Ramsay MacDonald, a determined pacifist and intellectual. The decision was doubtless due in a measure to MacDonald's conspicuous parliamentary gifts but it was regarded, none the less, as sensational. The most dramatic incident of the election was the defeat of Winston Churchill. It was unfortunate for him that he was just recovering from an operation for appendicitis but, had he enjoyed good health, it is doubtful whether the result would have been materially different. His constituency was Dundee in Scotland. Two members represent the city and the voting was:

Dundee (Electorate, 78,007):	
E. Scrymgeour (Prohibition).....	32, 078
E. D. Morel (Labor).....	30, 292
D. J. Macdonald (National Liberal).....	22, 244
Winston Churchill (National Liberal).....	20, 466
R. R. Pilkington (Independent Liberal).....	6, 681
W. Gallacher (Communist).....	5, 906

That Scrymgeour, the only Prohibitionist in the House, should have beaten a powerful Minister like Churchill by more than 12,000 votes, showed how far the pendulum had swung against "a spirited" policy abroad. During the year under review, the chief event was the marriage of Princess Mary, only daughter of King George V, to Viscount Lascelles, heir to the Earl of Harewood. The ceremony took place on 26 February in Westminster Abbey, and was an occasion of immense public rejoicing. In June, the Prince of Wales returned from a tour that included India, Japan,—where his game of golf with Prince Hirohito became at once historic— and Egypt. Defying precedent, he acted as best man for his cousin and aide-de-camp, Lord Louis Mountbatten, who—also in Westminster Abbey—married (July) Edwina Cynthia Annette Ashley, the wealthy heiress of the late Sir Ernest Cassel—the pair spending their honeymoon in the United States. During the year the Prince was twice thrown from his horse on the hunting field.

Over his matrimonial prospects, rumor has been busy. On his return from travel, he was greeted at Buckingham Palace by a company that included the Princess Yolanda of Italy, whose religion would have to be changed, of course, if she were to be included in the Protestant Succession of Great Britain. Another

rumor associated the name of the Prince with that of Lady Elizabeth Bowes Lyon, daughter of the Earl of Strathmore whose castle of Glamis is mentioned in Shakespeare's 'Macbeth.' In January 1923, however, the King announced that it was the Duke of York who had sought and won this lady, to which betrothal he gave his consent. While the Prince of Wales is heir apparent to the throne, the Duke of York is heir presumptive, and his engagement to a lady of British birth and non-royal status marks a great change in the policy of the court. The throne is thus rendered dependent on national affiliations rather than on international alliances, which, indeed, had become difficult, if not impossible, owing to the failure of royalty in Germany, Russia and Greece. During the year, there have been certain determining social factors. On 11 Dec. 1922, the number of unemployed, though reduced, was still 1,388,600. Depression in the shipping business and in foreign trade generally accounts for this large proportion—about 16 per cent—of idleness, to relieve which distress there are heavy charges on the community. The sums paid in unemployment benefit were 1920, £2,420,000; 1921, £58,500,000; 1922 (to 2 December) £44,000,000. To this expenditure, contributions are made by the employers, employed and the state, the figures for 11 months of 1922 being: employers, 16,750,000; employed, 14,500,000; state, 11,350,000. total, 42,600,000.

It will be noticed that while Great Britain has reduced her imports, her exports have slightly increased. Her purchasing power is restricted and she has to meet foreign obligations which tend to swell her export figures. Despite the strain of war, the virility of the British people is well maintained. According to the registrar general's report, published in 1922, the number of births in 1920 was 957,782, and of deaths, 466,130, showing a net increase of population of no less than 491,652, or nearly half a million. For the year 1922, a rough estimate suggests that the increase of population will work out at—say—300,000. Under these circumstances emigration is inevitable and schemes for assisting settlers to reach the Dominions are in progress.

PHILIP WHITWELL WILSON.

GREECE, a country of southeastern Europe and a constitutional monarchy since 1830. In 1922, the throne was occupied to 27 September by Constantine and after that date by his son George. For details of the abdication of Constantine and the accession of George see section on History in this article.

Area and Population.—The territory of old Greece (before 1912) comprised so-called continental Greece in the extreme of the Balkan Peninsula, the Peloponnesus to the south of the Gulf of Corinth, Euboea, the Cyclades including Naxos, Syra, Andros, Mikonos, Tenos, Paros and other islands about 220 in number, the Sporades, and the islands in the Ionian Sea, including Corfu, Xante, Santa Maura, and Cephalonia. As the result of the Balkan war of 1912-13 Greece added 16,919 square miles to her territory, including Macedonia, Epirus, Crete, and the other Aegean Islands, all of which

is termed new Greece. After the World War the powers permitted Greece to retain all those Aegean Islands which she occupied during the war except Imbros, Tenedos and Castellorizzo, which were to be restored to Turkey. Also with the consent of the allied and associated powers Greece, after the war, occupied part of the Bulgarian province of western Thrace and the greater part of the province of Aidin in Asia Minor. From the last named she was ousted in the early autumn of 1922 by the Turkish Nationalist forces under the command of Mustafa Kemal Pasha. The Turkish victory also resulted in a readjustment of the boundaries between Turkey and Greece in Thrace. The population of the nomes or departments of Greece is as follows:

Names	Census, 1920
Old Greece:	
Attica and Boeotia.....	581,829
Phthiotis and Phocis.....	119,215
Acarnania and Aetolia.....	195,571
Achaia and Elis.....	271,672
Argolis and Corinthia.....	158,528
Arcadia.....	155,833
Laconia.....	137,456
Messenia.....	226,066
Euboea.....	127,876
Cyclades.....	120,292
Corfu.....	123,371
Cephalonia.....	64,775
Xante.....	39,078
Larissa.....	239,528
Trichkala.....	186,476
Arta.....	52,578
Total (Old Greece).....	2,800,164
New Greece:	
(Macedonia):	
Salonica.....	398,240
Pellis.....	94,117
Serres.....	113,620
Drama.....	161,890
Kosani.....	175,577
Florina.....	200,866
	1,144,310
(Epirus):	
Janina.....	167,644
Preveza.....	45,632
	213,276
(Aegean Islands):	
Mytilene.....	146,852
Chios.....	61,873
Samos.....	65,756
	274,481
Canea.....	97,175
Candia.....	118,101
Lasithion.....	61,158
Rethymnos.....	68,715
	345,149
(Thrace*).....	669,697
Grand total.....	5,447,077

* Boundary settlement in Thrace will reduce the total for this division.

The chief cities and their populations are the following: Athens, 300,701; Salonica, 170,195; Piraeus, 133,482; Patras, 52,133; Volo, 30,056. Athens is the capital.

Religion.—The religion of the state is the Greek Orthodox but complete freedom of worship is guaranteed to all other sects. The great majority of the inhabitants are members of the Greek Orthodox faith. The National Church is governed by a permanent council called the Holy Synod, which consists of the Primate of Athens and four archbishops and bishops. There

are three archbishops and 29 bishops in the territory of Old Greece and 59 archbishops and bishops in the territories acquired since the Balkan Wars. The Roman Catholic Church has three archbishops and three bishops in Greece.

Education.—Primary education is free and compulsory between the ages of 6 and 12 but the attendance law is poorly enforced and the percentage of illiteracy is very high, being 30 among the army recruits. According to latest returns there are in the kingdom 6,799 primary schools with a teaching staff of 8,641, of whom about one-half are females. In these schools there were 476,695 pupils, including 174,805 females. Secondary education is provided for by 76 high schools and 425 middle schools with 55,408 pupils, including 5,311 girls. In addition there are two agricultural schools with 150 students, a trade and industrial academy and government commercial schools at Athens, Volo, Salonica and Patras. In these commercial schools there are about 350 students. There are two universities at Athens with about 165 professors and 3,300 students. There is a polytechnic institute with 180 students. Primary education costs the state about 10,000,000 drachmai yearly. The Ministry of Education also maintains an archaeological department which has charge of the conservation and repair of the ancient monuments which abound in the country. There are also several schools of archaeology maintained by foreigners, such as the American School at Athens, etc.

Production.—Agriculture is the chief occupation of the inhabitants but only 20 per cent of the total area is arable. Great efforts are being made at reafforestation, the country having been denuded of its trees. Irrigation and drainage works are being constructed and road building is proceeding as rapidly as the financial state of the country permits. The land is largely in the hands of small proprietors. The currant crop is the chief industry and has its centre about Patras. In 1922 the yield of this crop was 103,307 tons. To help maintain prices there is a recent law limiting the production of currants. In 1921, wheat was grown to the extent of 261,565 metric tons, barley 125,112 tons, corn (maize) 200,818 tons, oats 65,500 tons, wine 51,415,685 gallons and olive oil 13,801,000 gallons, nuts 6,376,590 pounds, citrus fruits about 6,000,000 cases and cheese 14,812,875 pounds. The breeds of cattle and other live stock are being greatly improved by the introduction of pure-bred stock. The last live stock census showed in Greece 5,467,828 sheep, 365,074 swine, 527,173 cattle, 131,436 horses, 111,979 mules, and 242,700 asses. Mining is becoming increasingly prominent, the chief ores worked are those of iron, copper, zinc, lead, tin, silver, antimony, manganese, cobalt, lignite and sulphur ochre. The output of lead in 1921 was 24,313 tons, of magnesite 65,015 tons, of iron 45,718 tons and of salt 58,050 tons. Lignite production declined from the record productions set in 1918, 1919 and 1920, being only 144,480 tons. The manufacture of olive oil, wine, leather, soap and textiles are the chief industries of the kingdom. The last industrial census reported 2,213 factories, employing 36,100 operatives and capitalized at 260,363,000 drachmai.

Commerce and Trade.—The value of the imports of Greece in the year 1921 was 66,944,700 English pounds sterling and that of the exports 32,679,600 pounds sterling. Yarns and textiles, agricultural products, medical supplies, metals and metal manufactures, leather, hides, confectionery and forest products formed the chief articles on the import list while the same articles also figured largely in the exports. In 1920 Great Britain furnished the largest quota of the imports and also took more of the exports than any other nation. The United States was second on the list of nations in the foreign trade of Greece. Exports during the first six months of 1922 were valued at \$32,319,519; imports at \$45,322,815.

Finance.—The revenue in 1921 was 1,033,579,740 drachmai and the total expenditure the same year was 1,298,759,754, leaving a deficit of 265,180,014 drachmai. No budget for the year 1921-22 was submitted to the National Assembly and not even provisional estimates of revenue and expenditure were available. During 1922 the expenses of administration and of the war with Turkey were met by monthly credits passed by royal decree and without parliamentary control. The public debt of Greece is mostly under the control of an international commission to which are assigned certain revenues and duties. In 1921 the commission reported an income of 149,185,600 drachmai. The external debt of Greece at the beginning of 1922 was \$204,401,300. According to the agreement of 10 Feb. 1918, Great Britain, France and the United States agreed to advance credits to the Greek government in stated sums, of which there have actually been paid 7,000,000 pounds by Great Britain, 15,000,000 dollars by the United States and 30,000,000 francs by France.

Army and Navy.—Military service is compulsory and well high universal from the 20th year to the 51st year. Active service is two years with the infantry and three years in the cavalry and artillery followed by 21 years in the first reserve and the remainder of eight years in the second reserve. During the year 1922 the Greek army was on a war footing as it had been for nearly 10 years. In 1922 Greece had in Asia Minor 11 divisions and a number of detached regiments until the debacle before Smyrna in September. All men liable to service up to the age of 40 were mobilized. The average number of men in a division is 12,000. For details of the military operations during the year see section on History at the end of this article. The navy consists of seven cruisers, three of which are virtually obsolete, 13 destroyers, six modern torpedo boats, two submarines and a number of auxiliary craft. At the close of the war Greece received the Austrian destroyer *Uluu* and seven torpedo boats.

Communications.—Greece has a total railway mileage of 1,470 miles. The principal rail routes are the Piraeus-Athens-Peloponnesus, the Hellenic, the Salonica-Monastir and the North Western. Most of the lines are state-owned. There are 10,565 miles of telegraph lines served by 350 offices and 7,750 miles of telephone lines mostly confined to six urban systems. There are 940 post-offices. The merchant marine of the Greek nation at the beginning of 1922 con-

sisted of 1,192 sailing vessels of 113,726 tons and 408 steam vessels of 402,221 tons.

Government.—Since 1911 the legislative power is vested in two chambers. The lower chamber is called the Boule; has 316 members who must be at least 25 years of age. It meets yearly in October for a period of three months. The second chamber is really a council of state and passes on the constitutionality of the laws acted on by the lower chamber, and annuls decrees found to be contrary to the constitution. The executive power is vested in the sovereign who attains his majority upon the completion of his 18th year.

History.—The Ministry of Finance announced on 1 January that the British government had withdrawn its objections to a private banking credit to Greece in the sum of \$75,000,000. The government projected a great port at Dede-Agatch, on the Aegean, which is to be renamed Alexandroupolis. The quarrel with Turkey continued to absorb most serious attention. On 20 January, Mustapha Kemal, the Turkish National leader, ordered all the Greek residents of Konieh, in Anatolia, to be deported to Erzerum. The Turkish authorities in Samsun arrested 300 Greek civilians on 30 January and put them to death. There were several hangings in various parts of Turkey and feeling ran high among the Greeks at home and in Asia Minor. Large quantities of Greek stores were confiscated by the Turks in Constantinople early in February and a clash with Greek consular officers and Turkish police was only averted by the intervention of the British police. Desultory fighting continued between the forces of Kemal and the Greeks. A Kemalist conspiracy was discovered by the Greeks in Smyrna and the Greek government ordered the harbor closed from sunset to sunrise. The Gounaris cabinet fell 10 March but after the failure of Stratos to form a cabinet M. Gounaris was recalled. Greek naval forces seized the French steamer *Espoir* on 14 February; the vessel carried coal and oil whose destination the Greeks alleged to be the Kemalist government at Mersina. A long controversy ensued with France, the upshot of which was that the boat was released by the Greeks, who kept the cargo and referred the whole matter to an international prize court. A month later the Greeks seized the Italian steamers *Umbria* and *Abbazia*, retaining the latter. This incident caused friction with Italy. On 23 March the three great powers forwarded to Athens their decision about an armistice between the Greek and Turkish forces in Asia Minor. The text of this document is as follows:

"The Foreign Ministers of the three great powers, having met together in Paris for the purpose of restoring peace in the Near East, and in order to try to formulate some suggestions for the evacuation of Asia Minor without further bloodshed and other material losses, have considered it their duty to advise very earnestly the interested Governments to accept an immediate cessation of hostilities."

This preamble is followed by the text of the proposed armistice as follows:

Article 1. The hostilities will cease at midnight of the night of ———, 1922.

Article 2. While maintaining their general lines now occupied by their main forces, the belligerent parties must withdraw to the rear their advanced elements in such a way as to suppress any contact, and they must also open a space free from troops, which space must not be less than ten kilometers between the two fronts, in conformity with the decisions to be taken by different local commissions.

made up of the representatives of the Greek and Turkish commands, and also of a number of Allied officers.

Article 3. During the armistice no reinforcements, whether in personnel or in material, shall be operated by either of the opposing armies, and no transfer of any units constituting the front will be permitted.

Article 4. A number of Allied commissions under a common Allied direction shall be attached to each belligerent army.

Their duty shall be to control in each of the armies the execution of the clauses of the armistice, and to settle the incidents that may arise in this connection. These Allied commissions shall also have the right to intervene in the activities of the authorities occupying their respective territories, in order to assure the protection of the minorities resident in those localities.

Article 5. The Hellenic High Command and the Ottoman High Command assume the obligation of accepting and of loyally complying with the arbitration of the Allied commissions.

Article 6. The hostilities will be suspended for a period of three months, which period may be automatically renewed until the time when the belligerents will have accepted the conditions of the preliminaries of peace. Should one of the belligerents desire not to renew the present convention, he shall have to notify the other party and also the representatives of Great Britain, France and Italy, at least fifteen days before the expiration of the armistice then in force.

"CURZON"
"SCHANZER"
"POINCARÉ."

The Greek government agreed to this armistice conditional on certain reservations of a strictly military character. However, it declined though unofficially to the clause involving the evacuation of Asia Minor which for Greece would involve the abandonment to the tender mercies of the Turks of the entire Greek population of Asia Minor. The Turkish nationalists notified the great powers that their acceptance of the armistice was conditional on the withdrawal of the Greek forces in specified areas within two weeks and on the complete evacuation of Asia Minor by the Greeks within four months. In April the National Assembly enacted a law for a forced internal loan of 1,600,000,000 drachmai (the equivalent of \$75,000,000 at the present rate of exchange). This loan and the method of its execution caused somewhat of a sensation. It declared one-half of the paper currency of the kingdom void for any monetary transaction and good only as a bond bearing 6 per cent interest, and redeemable in 20 years. Under the terms of the act, all bank notes in Greece were cut in two, one-half of which was to be used thereafter as currency, and the other half becoming automatically a 6 per cent 20-year bond. Certain adjustments were permitted for a period not to exceed three months. Three times a year certain of the bonds will be drawn for redemption at par. The cutting of the notes is a temporary measure; the government being prepared to replace the bond side of the notes with a regular bond of a given denomination and the currency side with new paper currency. The depletion of the treasury funds resulted from the effects of the two-year financial blockade which prevented the government from obtaining a loan abroad and also from the great cost of the operations and maintenance of the Greek armies in Asia Minor.

An adverse vote in the National Assembly on 11 May resulted in the resignation of the Gounaris cabinet, which was at once succeeded by the administration of Mr. Stratos. The latter appeared before the Assembly on the 17th and asked for a vote of confidence on the policy he had just outlined. The vote was denied him

and he resigned the following day. Mr. Gounaris now co-operated with Stratos in forming a Coalition ministry which was completed on 23 May under the presidency of Mr. Protopapadakis, who had been Minister of Finance in the Gounaris ministry. On the following day this cabinet received the endorsement of the National Assembly by a vote of 218 to 30.

On 25 May General Papoulas, commander of the Greek forces in Asia Minor, resigned his command on the ground that he had reached the age limit. He was succeeded by General Hadjanestis, who thereupon made a tour of the entire front and on 28 June submitted his report advising a continuation of the war with Turkey. A great council of war was held the following day at the summer palace at Tatoi, at which the King and most of the Cabinet members assisted. It was decided not to evacuate Asia Minor and to bend all efforts to force a decision on the Near East question. The Greeks determined at length to end the long and costly war by a sudden advance on Constantinople but were frustrated by the attitude of the Allied forces on the Straits. For the moment the advance on the Turkish capital was abandoned but Greece issued a decree declaring Smyrna and the surrounding territory in Asia Minor an autonomous state. The Allies massed troops along the Chatalja front to forestall any Greek advance in that quarter. Greece frequently protested that the Allies were limiting her forces as a belligerent. The situation was suddenly changed the last week in August when the Turkish forces drove the Greek armies into precipitate retreat along the entire front in Asia Minor. About 100,000 Greeks were captured or killed and great supplies fell into the hands of the Turks. The rout of the Greeks was accompanied by the flight of hundreds of thousands of Greek civilian refugees, who fled to the coast to escape massacre at the hands of the advancing Turks. Efforts to arrange an armistice proved fruitless and Smyrna was taken by the Turks on 9 September. Throngs of civilian and soldier refugees packed the quays of Smyrna and Greek and allied vessels aided in the gigantic task of evacuation. Typhus and other epidemic diseases added to the horror and demoralization. With the entrance of the Turks into Smyrna, the burning of the city a few days later and the massacre of many of its Christian inhabitants on 13 September the Greek occupation of Asia Minor came to an end and the nation turned its eyes on Thrace, the new focus of Turkish activity against Greece. King Constantine advised the people to remain calm in face of the national disaster and a new cabinet was formed under the premiership of Mr. Triantafyllakos. The broken remnants of the army of Asia Minor were transferred first to the islands of Chios and Mytilene and later to the mainland. There were symptoms of mutiny during the transfer as the troops learned of the extent of the disaster and felt that they had been betrayed. On 20 September it was announced that Greece had an army of 100,000 men on the Thracian front. At the same time the Greek government learned of the Allied offer to the Turkish Nationalists of eastern Thrace, together with the restitution of Adrianople and Constantinople. While the government at Athens

was discussing these happenings a military revolution broke out in Mytilene under the lead of Colonel Gonatas. The troops destined for Thrace demanded to be transported to Athens and, under the escort of the navy, several transports reached Laurium on 26 September. Here a revolutionary committee was formed led by Colonels Gonatas and Plastiras and Captain Phokas of the mutinous navy. With civil war imminent, King Constantine abdicated in favor of his son, Crown Prince George, on 27 September. The latter took the oath before the Triantafyllakos ministry and the revolutionary committee and the ministry then resigned. A ministry was then formed by the revolutionary committee with Mr. Krokidas as Premier. One of the first acts of the revolutionary ministry was to order the arrest of the former premiers Gounaris, Stratos, Protopapadakis and the ministers Goudas and Theotokis to be tried on charges of high treason. The avowed purpose of the revolution in Greece was to save Thrace, nevertheless Thrace had to be sacrificed at the Mudania conference, where the armistice between Turkey and the Allies was signed on 10 October. The revolutionary committee explained the failure to save Thrace by stating that the revolution came too late to accomplish its purpose. Martial law was proclaimed throughout Greece on 11 October and on the same day Mr. Venizelos was appointed official delegate of Greece at the Allied capitals. Greece began the evacuation of Thrace on 15 October and the revolutionary committee turned its attention to the pressing internal problems. On 22 October a great popular demonstration took place at Athens expressing the people's confidence in the revolutionary committee. On the 26th, Prince Andrew, brother of the deposed King Constantine, was arrested on the charge that he was responsible for the disaster in Asia Minor. The revolutionary investigating committee published a report on 8 November in which it placed the responsibility for the disaster to Greek arms in Asia Minor. It accused all the anti-Venizelist governments from 1915 to 1922 of alienating the sympathies of the Allies, of recalling Constantine in 1920 and of various breaches of the constitutional law of the kingdom. The report was a form of indictment in that it demanded the establishment of a special court-martial for the trial on a charge of treason of Messrs. Gounaris, Stratos, Protopapadakis, Theotokis, Baltagis, Hadjanestis, Goudas and Stratigos. Mr. Zaimis declared his willingness to assume the premiership on 9 November on the retirement of Mr. Krokidas. The trial of the former ministers began on 13 November when the jurisdiction of the revolutionary court was questioned. In the days that followed General Papoulas stated to the court that the advance on Angora in August 1921 was ill-advised and undertaken without his consent. Coming to the campaign of 1922 General Papoulas stated that the contemplated advance on Constantinople in July 1922 so weakened the Asiatic front that its collapse became at once imminent and inevitable. Practically all the accused ministers took the stand in their own defense and defended their every action. Gounaris offered to present official proof that he had received assurances of support from Great

Britain but these proofs were excluded from the record. On 22 November General Metaxas, leader of the anti-Venizelist opposition, pleaded with the Premier to ask that any sentence passed on the accused by the revolutionary court be appealed to the new National Assembly. The court refused the plea as transmitted by the Premier and the latter thereupon resigned. Zaimis, who had some time before signified his willingness to form a ministry, refused to subordinate the ministry to the leaders of the revolution and refused to form a cabinet. Colonel Gonatas took the premiership himself on 25 November, formed a cabinet and with it assumed office on 27 November. On the 27th the final arguments were made in the state trials, the court retiring at midnight and returning at 2 A. M. on the 28th with a death sentence for the five former ministers and General Hadjanestis and a decree of life imprisonment for the other two prisoners. The sentence was carried out at 11 o'clock in the morning.

An official announcement issued after the executions reads: "The sentence of the court martial was delivered this morning. Messrs. Gounaris, Baltazis, Theotokis, Protopapadakis and Stratos and General Hadjanestis were condemned to death and were executed this morning. General Stratigos and Mr. Goudas were sentenced to penal servitude for life. The military defendants were also sentenced to degradation, and the following fines were inflicted: Gounaris, 200,000 drachmas; Stratos, 355,000 drachmas; Protopapadakis, 500,000; Baltazis, 1,000,000; Theotokis, 1,000,000; Goudas, 200,000 drachmas."

A statement by the court martial, giving the reasons for imposing the sentence of death, says in effect that the defendants knowingly concealed from the people the danger involved in King Constantine's return to the throne, and that, although Greece was breaking away from her alliances, they did their utmost to consolidate Constantine's throne in order to enjoy office under him. "By terroristic methods," the statement adds, "they stifled all public opinion contrary to them, arranged with General Hadjanestis a pretended offensive against Constantinople, and thereby brought about the enemy's offensive and the collapse of the Greek front in Asia Minor, thus deliberately delivering a large part of the army into the enemy's hands. They therefore were convicted, in accordance with several articles of the military and penal codes, of conspiring to commit high treason."

On the day following the executions Great Britain severed relations with the Greek government and on 1 December the Greek Minister at Washington, Mr. Lambros Coromilas, resigned in protest against the execution of the former ministers. On 3 December Prince Andrew was tried on a charge of treason and sentenced to life banishment from Greece and to suffer degradation and deprivation of his army rank. See also NEAR EAST.

GREENLAND, the second largest island in the world and the only colony of Denmark, has an estimated area of 845,000 square miles, of which the greater part is uninhabited. The inhabited portion has an area of 46,470 square

miles and in 1911 had a population of 13,449. The largest settlement is Sydproven, which had 789 inhabitants in 1911; the smallest is Skansen with 46 inhabitants. Imports from Greenland to Denmark were valued at 4,020,000 kroner in 1920 and exports from Denmark to Greenland the same year were valued at 3,229,000 kroner. The trade of Greenland is a state monopoly. Seals and sealskins, fox skins, fish and oil are the chief products of the colony. See also DENMARK.

GREENSBORO COLLEGE, an educational institution for women of the Methodist Episcopal Church, South, chartered in 1838 and located at Greensboro, N. C. In 1922-23 it had a faculty of 25 members, 324 students, property valued at \$756,000, and a total income of \$77,000. Samuel Bryant Turrentine, D.D., is president.

GREENVILLE COLLEGE, a Free Methodist co-educational institution, founded in 1892 and located at Greenville, Ill. In 1922-23 it had a faculty of 23 members, 409 students, property valued at \$250,000 and an income of \$40,000. Eldon Grant Burritt, A.M., is president.

GREENVILLE WOMAN'S COLLEGE, a Baptist educational institution, founded in 1854 and located at Greenville, S. C. In 1922-23 it had a staff of 39 teachers, property valued at about \$627,800, and an income of approximately \$110,000. Number of students enrolled for the year 1922-23 not given. David Marshall Ramsay, D.D., is president.

GREENWOOD, Elizabeth Ward, American evangelist; b. Brooklyn, N. Y., 1850; d. there 28 Nov. 1922. She was the daughter of Joseph M. Greenwood, a Brooklyn lawyer. For nearly 40 years she was a preacher of the Gospel in churches, jails and asylums throughout the United States and in many other countries of the world. For 20 summers she filled the pulpit of the Congregational Church at Chapinville, Conn., and for seven years she served as pastor of the famous Mayflower Mission of Plymouth Church in Brooklyn. From 1887 to 1912 she was superintendent of the evangelistic work of the World's Woman's Christian Temperance Union, and of the National Woman's Christian Temperance Union, and for 34 years was president of the Woman's Christian Temperance Union in Brooklyn.

GREINER, Fred, American political leader; b. 1854; d. Buffalo, N. Y., 25 Dec. 1922. After graduation from the public schools, he took up the study of law in a local office and was admitted to the bar in 1876, when he was 22 years old. Soon afterward he began to make himself felt as an influence in Buffalo politics. From the start he made it his rule to take no middle ground on any important question. "I make up my mind on an issue, and then I am a partisan," he often said. He wrested control of the Republican Party in Erie County from William C. Warren in a memorable primary contest in 1906. He supported President Roosevelt and Governor Higgins in opposition to the efforts of Benjamin Odell, former Governor, to direct the State politics of the party. The result was a sweeping victory for Greiner, and from that day until his death he reigned supreme, defeating

three attempts to overthrow him. In 1908 he and Herbert Parsons of New York led the fight for the renomination of Governor Hughes. In 1910 he was a factor in the successful fight to make Roosevelt presiding officer of the Republican State Convention. Again he combined with Roosevelt in 1910 in support of Governor Hughes's efforts to pass the Hughes direct primary bills. In 1916 Greiner was successful in persuading Roosevelt to take the stump for Hughes, who was a candidate for President. Mr. Greiner held only two offices during his political career,—one was a minor clerkship in the Municipal Court and the other, the Post-mastership of Buffalo, which he held for 12 years.

GRENADA, an island of the Windward group in the Antilles belonging to Great Britain. It has an area of 133 square miles and a population of 75,663 in 1920. The capital is Saint George. There are 11 government and 48 aided schools with 9,437 pupils and one secondary school for boys and two for girls. The revenue in 1920 was 134,128 pounds sterling and the expenditure 148,175 pounds. Imports the same year were valued at 630,803 pounds and exports at 603,697 pounds. Cocoa, nutmegs, mace, limejuice, raw cotton, and cotton seed are the chief products and exports. The United States was the largest importer in 1920, but took less of the exports that year than Great Britain. The island is part of the administration of the Windward Islands. The Governor and Commander-in-Chief in 1922 was Sir G. B. Haddon-Smith. The seat of the government is at Saint George.

GRENADA COLLEGE, an educational institution for women under the auspices of the Methodist-Episcopal Church, South, founded in 1852 and located at Grenada, Miss. In 1922-23 it had a faculty of 18 members, 200 students, property valued at \$300,000 and an income of \$70,000. J. R. Countiss, A.B., D.D., is president.

GRIFFITH, Arthur, Irish journalist and statesman, founder of the Sinn Fein party; b. Dublin, 1872; d. there, 12 Aug. 1922. He was educated at a Christian Brothers school. Like his father, he became a compositor and soon advanced to copy reader on a Dublin journal. After a time he went to South Africa where he was employed as a surface miner on the Rand. The native Kafir miners called him "Cuguan," that is, "The Gentle One," "The Dove," and, on returning to Ireland, he adopted "Cuguan" as his pen-name. On his way back to Ireland he visited the Continent and made a close study of the constitutional system of Austria-Hungary. He reached Ireland with a very definite idea as to the form Irish national development should take and in 1899 founded a paper called *The United Irishman*, his articles in which soon attracted attention. His political master was Thomas Davis, and he was steeped in the literature of the American Revolution and of the Civil War, in the Nationalist verse of the Young Irelanders, and in English literature. Griffith wrote in a convincing and interesting way on economic subjects, industrial development and finance. The official Nationalist Party looked

on him with suspicion. Griffith became widely known by his book on 'The Resurrection of Hungary,' in which he set forth the advantages which had accrued to Hungary from the policy of self-help advocated by Deak, and Ireland's salvation, he argued, lay not through violence, but through practical and systematic work. About 1902, Griffith and a handful of disciples launched the Sinn Fein movement. His policy was one of Irish self-reliance (Sinn Fein means "Our-selves"), and he persisted, despite many discouragements, in his efforts to bring about the self-government of Ireland by peaceful means. Armed revolt was no part of his program. In contrast with the constitutional home rule policy of Parnell, Redmond and other Irish leaders, he urged abstention by the Irish members from the British House of Commons, and argued that for the Irish people to send representation to the British Parliament was an admission of its right to legislate for Ireland. Restoration of the independent Irish Parliament which existed before the British Act of Union of 1800 was advocated by Griffith. He and his associates worked for the development of Irish industries, the revival of the national games, the national music and the Irish language. The full program of the Sinn Fein was propounded by Griffith at a great gathering in the Rotunda, Dublin, in November 1905. However, it met with little favor for several years. A Sinn Fein candidate stood for the Longford parliamentary seat and was hopelessly beaten and Sinn Fein appeared to be dead. Griffith continued to issue weekly a four-page sheet called *Sinn Fein*. The apparent success of the Nationalist Party at Westminster militated against the growth of the Sinn Fein until 1914 when a division developed in the Irish Volunteer organization, one section following Redmond and the Nationalists and the other allying itself with the Sinn Fein. Griffith was drawn into taking an active part in the organization, which gave him a new journal, *Nationality*, which soon became the official organ of the Sinn Fein. The rebellion of Easter of 1916 burst upon Griffith like a bombshell. He saw in it the destruction of all his hopes. In due course he was arrested and lodged in Reading Gaol with the less dangerous of the extremists. As the "physical force" party had been crushed and its leaders executed or in prison, the peaceful business of working out the old Sinn Fein policy was resumed and the movement grew by leaps and bounds. When Griffith was released he found himself president of the most powerful political society in Ireland. Election after election was won by the Sinn Fein and then came the release of the extremists, headed by De Valera, who ejected Griffith from the party leadership, his views being far too moderate to suit them. During the Peace Conference at Paris in 1919 Griffith was chosen to present the Irish case, but failure to secure a safe conduct from the British Government prevented his attendance. In July 1919, he was elected acting president of the Irish National Assembly, in the absence of De Valera, who was in the United States. In October of the same year, Griffith was elected one of the permanent vice-presidents of the Sinn Fein organization. Griffith was arrested in November 1920 and spent seven months in Mountjoy

Prison, Dublin. During his imprisonment he issued a message to the people as to the conduct of the Sinn Fein. Early in June 1921, there were reports that a conference would be held in London at which Irish leaders would be invited to consult with members of the British Cabinet. Griffith was mentioned as one of the probable delegates. His release from prison followed later in the month. He accompanied De Valera to London in July 1921, when the series of conferences opened. Later he was appointed chairman of the Sinn Fein Mission to London and was the principal factor on the Irish side in carrying on the negotiations, which culminated with the signing of the treaty between Great Britain and Ireland establishing the Irish Free State. Griffith at once set about the formation of the Irish Provisional Government. The statesman in him gave effect to what the educator had taught. His action had three stages: first, in the London debates, where he forced acceptance on a wavering Irish Cabinet; second, in the debates where he had to prevent the Dail from going back on what the delegates had done; thirdly, in the Ministry, when he had to decide that attempts to defeat by force the country's declared acceptance must be put down by force. He lived to see those who in opposition to him preached an irreconcilable policy render their own ideal furiously unpopular by the courses they pursued.

GRINNELL COLLEGE (legal title, The Trustees of Iowa College) a non-sectarian, co-educational institution, founded in 1847 and located at Grinnell, Iowa. Statistics for 1922-23 show a faculty of 89 members, 880 students, property valued at \$2,864,000, and an income of \$307,000. John Hanson Thomas Main, Ph.D., LL.D., is president.

GRISMER, Joseph Rhode, American theatrical manager, actor and playwright: b. Albany, N. Y., 4 Nov. 1849; d. New York City, 3 March 1922. He was educated at the Albany Academy and made his first appearance on the stage in the city of his birth in 1870. Three years later he went to Cincinnati, Ohio, as the leading man at the Grand Opera House. In 1877 and later he appeared at the Grand Opera House, Baldwin and California theatres in San Francisco. For several years he and his first wife, who was Phoebe Davis, toured the country as joint stars. He dramatized 'Monte Cristo' and 'Called Back.' On 2 Jan. 1893 his first original play, 'The New South,' written in collaboration with Clay M. Greene, was produced at the Broadway Theatre, New York. In it he played the part of Captain Henry Ford. Mr. Grismer appeared as Lieut. Bevis Cranbourne in 'Humanity' in 1895 at the 14th Street Theatre, New York, and on tour. In 1898 he rewrote 'Way Down East,' and, under a partnership arrangement, became joint proprietor with William A. Brady of it, 'The Man of the Hour,' 'As Ye Sow' and other plays. In 1899 he adapted 'The Manicure' from the French and wrote 'Sky Farm,' produced in 1902. He was elected Shepherd of the Lambs Club in 1910 and again in 1917.

GRISWOLD, Annie Robe, Anglo-American actress: b. London, England, 1862; d. Lenox, Mass., 26 July 1922. She was the daughter of

Eliza Rugg, a Shakespearean actress in England 50 years ago. Her father was a scene painter. She went on the stage as a child under the name of Annie Robie, and early began to play in Shakespeare. Lester Wallack brought her to New York, and she succeeded Rose Coghlan as leading woman in his theatre. On her marriage to Daniel P. Griswold in 1888, she retired from the stage, though occasionally appearing in private entertainments.

GRONNA, Asle J., United States Senator: b. Elkader, Iowa, 10 Dec. 1858; d. Lakota, N. D., 4 May 1922. He was reared on a farm and educated in the schools of Houston County, Minn., and at Caledonia Academy. He removed to South Dakota in 1879, where he was extensively engaged in farming and banking. He was a member of the Territorial Legislature (1889), and the president of the board of trustees and board of education of Lakota, N. D., for several terms. He was chairman of the county central committee of Nelson County, N. D. (1902-06) and a member-at-large from North Dakota to the 59th to 61st Congresses (1905-11). He was elected United States Senator in January, 1911, for the unexpired term of Martin N. Johnson, deceased, and was re-elected for the term of 1915-21. He had always been a Republican. Senator Gronna was one of "the little group of wilful men," so characterized by President Wilson in March, 1917, because of their opposition to arming American merchant vessels for defense against German submarines. Later, however, in the Spring of 1918, he called for a "peace with victory and honor."

GROVE CITY COLLEGE, a non-sectarian co-educational institution founded in 1876, chartered in 1884, and located at Grove City, Pa. In 1922-23 it had a teaching faculty of 28, 450 students, property valued at \$750,000, and an income of \$130,000. Weir C. Ketler, LL.D., is president.

GUADELOUPE, a French colony in the Lesser Antilles, consisting of the two islands, Basse-Terre and Grande-Terre, separated one from the other by the narrow channel called Riviere Salee. The area is 532 square miles. The colony has five dependencies consisting of the smaller islands, Marie Galante, Les Saintes, Desirade, St. Barthelemy and St. Martin, the total area of which is 688 square miles. The population in 1921 was 229,822. The colony is governed by an official styled Governor and an elected Council. The seat of the government is at Pointe-a-Pitre, which has a population of 27,679. In 1921, the revenue and expenditure balanced at 16,954,562 francs. The colony produces coffee, cocoa, rum and sugar for export while bananas, sweet potatoes, tobacco, maize, and manioc are grown for home consumption. The imports in 1920 were valued at 117,858,064 francs and the exports at 146,389,180 francs. In the year mentioned there were exported over 16,000,000 litres of rum, 14,265 tons of sugar, 1,100 tons of coffee, and 26,000 tons of vanilla. There is direct steam communication with France and a new wireless station was opened at Destrellan in 1918.

GUAM, an island possession of the United States in the Pacific Ocean in Lat. 13° 26' N.

Long, 144° 43' E., and the largest of the Mariana Archipelago. It is under the jurisdiction of the Navy Department of the United States and has been designated a naval station for purposes of government and protection. It has an area of 225 square miles. Agaña is the seat of the government. In 1920 there were 13,698 inhabitants classed as natives, who speak the native language called Chamorro. Elementary education is compulsory. There are 2,240 pupils of school age in the island. The products of the island are copra, rice, sweet potatoes, cocoa, coffee and sugar. Imports in 1922 were valued at \$418,613 and exports at \$35,650. The Governor in 1922 was Capt. Ivan C. Wettengel, U. S. N.

GUATEMALA, a republic of Central America, bounded north by Mexico, south by the Pacific Ocean and El Salvador, east by British Honduras, Honduras and the Gulf of Honduras, and west by Mexico. The area of the republic is 48,290 square miles with an estimated population of 2,124,101 in 1918. Of this population over 60 per cent are of pure Indian blood and most of the remainder are half-castes, there being very few whites. The republic is divided for administrative purposes into 23 departments. The capital and seat of the government is Guatemala City, which has a population of 125,000. An earthquake destroyed the capital in 1917 but its reconstruction has been largely completed on more stable lines than before. Other large cities are: Quezaltenango (28,940); Coban (30,770), and Totonicapan (28,310).

In 1922 Gen. Jose Maria Orellana was Provisional President till March, when he assumed the office of President for the term 1922-28.

Education.—Primary education is free and compulsory between the ages of six and 14. There are in the republic 1,334 government schools with 55,234 pupils in 1921. A national university was established in 1918 and is now known as the Universidad Estrada Cabrera. There are also several special schools. The annual expenditure on education is about 12,500,000 pesos.

Religion.—The prevailing religion of the inhabitants is the Roman Catholic but there is full freedom for all denominations. There is an archbishop of the Roman Catholic Church in the capital, who has suffragans in the neighboring republics of Costa Rica, Salvador, Honduras and Nicaragua.

Production.—The Cordilleras divide the country into two regions or drainage areas, of which the Pacific area is the smaller but by far the most important economically. This western area is well watered and is very fertile between the altitudes of 1,000 and 5,000 feet. This section of the republic is also the more densely populated. On the eastern or Atlantic area the population is sparse, but coffee is grown in the Coban region, bananas are raised in the Motagua Valley and the timber industries of the Peten District are important. The forest area of the republic is about 1,316,400 acres. The most important crop of the country is coffee, of which there are 1,519 plantations covering about 600,000 acres and containing some 450,000,000 trees. An average coffee crop is between 900,000 and 1,000,000 quintals of 101.43 pounds each. About 50,000 quintals are produced in the Varapaz re-

gion on the Atlantic side and are exported through the port of Livingston; 15,000 quintals (hard bean variety) are grown in the district of Antigua, the ancient capital, 25 miles from Guatemala City; and the remainder is produced on the Pacific slope. The 1921 crop was considerably below the average, amounting approximately to 750,000 quintals, or 500,000 bags of 150 pounds each. The 1920 crop was about 850,000 quintals. Before the war Germany took over one-half the coffee crop, but during the war period most of the crop was shipped to the United States. Two-thirds of the crop of 1920 went to the United States. In 1921, 60 per cent of the crop went to Europe, chiefly to Holland, Germany, England and Scandinavia, the remaining 40 per cent to the United States. The following table furnished by the United States Department of Commerce shows the quantity of coffee shipped, and unwashed, the average annual coffee price per quintal, f.o.b. Guatemalan port, and the total annual value of exports for several years, according to the Guatemalan customs statistics:

YEAR	Coffee, clean	Coffee, unwashed	Price per quintal	Total value
	<i>Quintals</i>	<i>Quintals</i>		
1898	334,461	491,571	\$11 54	\$8,397,863
1900	323,663	406,163	10 84	7,030,752
1905	507,639	378,970	9 91	8,035,177
1910	507,178	196,717	10 18	6,765,135
1913	707,491	209,807	15 03	13,156,309
1914	711,368	149,996	13 58	11,289,934
1915	696,495	98,920	11 50	8,919,756
1916	850,570	30,158	8 30	7,259,927
1917	892,829	14,102	9 75	8,815,078
1918	778,428	5,115	9 00	7,042,680
1919	892,829	4,801	23 00	20,623,405
1920	929,472	12,583	15 50	14,562,845
1921	922,083	16,472	10 00	9,352,608

The coffee plantations of the republic are mostly owned by Germans. Sugar is the second crop and in 1920 was planted to 54,270 acres. The yield of the sugar crop was 40,000,000 pounds. Bananas come next with an annual yield of about 9,500,000 bunches. Indian corn is also grown on about 800,000 acres, but the consumption is domestic. Beans, wheat, rice and potatoes are the other crops of importance. In the department of Peten there are forests of mahogany and valuable dye woods. Chicle gum is also an important product of this department. Cattle raising and swine herding are of increasing importance on the slopes of the Cordilleras. Silver, gold, copper, iron and lead are worked on a small scale due chiefly to the difficulties of transport in the interior. In 1920 the ferrochromium mines of Jalapa produced 2,241,300 kilos.

Commerce.—The foreign trade of Guatemala in 1921 totaled \$22,836,915 against \$32,652,776 in 1920, \$33,748,306 in 1919 and \$22,407,228 in 1913, according to customs statistics. Guatemala has usually had a very favorable balance of trade, but in 1921, due to the decline in value of its exports, especially coffee, this favorable balance was reduced to \$1,444,737. Guatemalan imports, however, increased from 57,051,387 kilos in 1920 to 70,410,005 kilos in 1921, and exports increased from 397,346,633 pounds in 1920 to

437,683,575 pounds in 1921. In 1913, 50 per cent of the imports were from the United States; in 1920, 65 per cent; and in 1921, 63 per cent. The United States took 83 per cent of the exports in 1920 and only 57 per cent in 1921. The trade with Germany increased materially in 1921 over 1920, that country taking 14 per cent of the exports and supplying 9 per cent of the imports. The chief imports and their values in 1921 were: Cotton goods, \$2,915,879; iron manufactures, \$1,289,259; railway material, \$1,229,890; machinery, \$536,812; alcoholic beverages, \$504,195; foodstuffs, \$463,173; drugs and medicines, \$375,751; paper goods, \$398,555; linen, hemp and jute goods, \$294,432; glassware, crockery and earthenware, \$193,519; silk goods, \$151,441; leather goods, \$139,713 and petroleum, \$128,967. In 1921 the chief exports were: Clean coffee, \$9,220,833; bananas, \$1,196,672; lumber, \$526,442; sugar, \$290,378; chicle, \$252,045; hides, \$183,130; shell coffee, \$131,775, and honey, \$48,906.

Currency and Finance.—The currency of the republic has been depreciating constantly for the last 50 years, due to the lowered price of silver and to the issuance of paper money without a backing of silver, the monetary standard. The average value of the peso in 1921 was 2.003 cents. According to the average 1921 value of silver, the intrinsic value of the Guatemalan silver peso would be \$0.5257. Thus it is practically impossible to attempt to state the relationship of the current value of the Guatemalan paper peso to any par value.

Government receipts were 168,482,214 pesos in 1920 and 241,759,790 pesos in 1921. Governmental expenditures amounted to 169,766,083 pesos in 1920 and to 295,923,386 pesos in 1921. These figures are only approximations to the actual value, because the receipts and expenditures, which are made in dollars, are converted at the arbitrary rate of 40 to 1, and the fluctuation in value of the peso must also be taken into consideration. At the beginning of 1922 Guatemala had a floating debt of about \$140,000 and an external debt to Great Britain of £1,940,643, the amortization during the previous year being £323,340.

Communications.—The republic has 512 miles of railways, all of which are consolidated into the International Railway of Central America. The main line runs from Puerto Barrios on the Atlantic Coast to Guatemala City (194.5 miles) and thence to San Jose de Guatemala on the Pacific (74 miles). The company receives subsidies from both Guatemala and El Salvador, but the Salvador division of 40 miles is operated separately. The capital is also connected with Ayutla on the Mexican border by a branch from the main line at Las Cruces to Ayutla (45 miles). Good roads are few, but in recent years several bridges have been built. In the interior most of the traffic is by mule pack. On the Atlantic, Guatemala has the ports of Puerto Barrios and Livingston and on the Pacific side those of San Jose, Ocos and Champerico. There are 423 postoffices, 4,512 miles of telegraph lines and 416 miles of telephone lines. There are 262 telegraph offices and 252 telephone stations.

Constitution and Government.—The constitution now in force was proclaimed in 1879 but has undergone several modifications. The

legislative power is vested in a National Assembly of representatives (one for every 20,000 inhabitants) chosen by universal suffrage for terms of four years and a Council of State of 13, partly chosen by the Assembly and partly by the President of the Republic. The latter is elected for a term of six years and wields the executive power. The President is assisted by the heads of six departments—Government and Justice, Foreign Affairs, Hacienda and Public Credit, Education, War and Fomento.

Defense.—All males between the ages of 18 and 50 are subject to military service. The military establishment numbers 85,535 officers and men upon mobilization. The reserve numbers 40,575 men divided into 81 battalions.

History.—On 29 March 1922, the *Guatemalteco* (official gazette) printed a decree, issued in accordance with the Hague Convention of 23 Jan. 1912, to regulate the trade in opium, morphine, heroin, cocaine and related products, while forbidding the use or possession of opium for smoking. On 18 June two groups of modern houses for laborers were opened by the Workmen's Co-operative and Savings Association of Guatemala City. On 6 July, in that city, coffee planters held a meeting to consider the questions of labor and the non-fulfillment of labor contracts which had prevented harvesting of part of the crops in 1921. It was announced in July that the California-Guatemala Fruit Corporation had been granted a concession to construct the port of Alvarado with the requisite buildings, including a lighthouse—all improvements to pass into the government's hands at the end of a five-year period. On 28 July the Guatemalan Minister of Foreign Relations and the Minister of France signed a commercial convention, by the terms of which the products of Guatemala, carried to French

markets, have the benefit of a 75 per cent reduction of customs duties, and French products, reciprocally, a reduction of 10 to 30 per cent when imported for sale in Guatemala. On 25 September the *Guatemalteco* gave the complete text of changes in the hydrocarbon law, said changes affecting especially contracts for exploitation of mining property. On 27 October, in the building of the Association of University Students, Guatemala City, the new Federal Council of the Federation of University Students of Central America took office, its membership comprising delegates from the universities of Salvador, Honduras, and Nicaragua, as well as Guatemala. In October, mention was made of the formation of a Bureau of Archaeology, Ethnology, and History, for the purpose of preserving national archaeological treasures and carrying on explorations in parts of the republic where such remains of ancient semi-civilizations may be found. See also CENTRAL AMERICAN CONFERENCE.

GUIANA, British. See BRITISH GUIANA.

GUILFORD COLLEGE, a Friends co-educational institution, founded in 1837 and located at Guilford College, N. C. In 1922-23 it had a faculty of 20 members, 240 students, property valued at \$545,000 and an income of \$55,000. Raymond Binford, Ph.D., is president.

GUN STEEL. See METALLURGY.

GUSTAVUS ADOLPHUS COLLEGE, a Lutheran co-educational institution, founded in 1862 and located at Saint Peter, Minn. In 1922-23 it had a faculty of 19 members, 400 students, property valued at \$321,320, endowment of \$257,500 and an income of \$76,701.58. O. J. Johnson, D.D., is president.

GYPSUM. See under UNITED STATES, subsection MINERAL PRODUCTION.

H

HAGUE CONFERENCE. See PEACE AND ARBITRATION, INTERNATIONAL; also REPARATIONS.

HAGUE COURT. See PEACE AND ARBITRATION, INTERNATIONAL.

HAIGAZIAN, A. H., Armenian professor and educator: d. Harpoot, Asia Minor, 25 May 1922. He was graduated from Columbia University and Union Theological Seminary and received the degree of Doctor of Philosophy from Yale University. He was president of the American College at Konia, Asia Minor, and was the most prominent Armenian educator in the Near East. While being deported with a group of influential Armenians and Greeks into the interior of the country, he contracted typhus and died in the American Hospital in Harpoot.

HAITI, a republic of the Antilles occupying the western part of the Island of Santo Domingo, the eastern part forming the territory of the Dominican Republic. The area of the Republic is estimated at 10,204 square miles with a population of 2,500,000. The majority of the population are negroes but there are great numbers of mulattoes, the descendants of former French settlers, the Republic being at one time a French colony. The capital is Port-au-Prince, with a population of 120,000. Other large cities are Cape Haiti (15,000); Jacmel (20,000); Aux Cayes (15,000); Gonaives (8,000); and Port de Paix (5,000). French is the official language of the country but the spoken tongue is a debased dialect called Creole French.

Education.—Primary education is free and compulsory but instruction is still in a backward state especially in the rural districts. There were in 1922, 982 primary schools of all classes with 53,379 pupils. Of these, 11 were national primary schools in charge of friars, with 3,260 pupils, 32 in charge of nuns with 4,782 pupils, 15 rural primary schools with 530 pupils, 38 private city primary schools with 2,951 pupils, 563 national rural primary schools with 18,187 pupils, 105 religious schools with 5,857 pupils, 118 girls' primary schools with 10,481 pupils, 100 boys' schools with 8,331 pupils, and 10 part-time schools with 965 pupils.

There are six national lycees with 655 pupils and 10 private secondary schools with 2,800 pupils. A national university was instituted in 1921.

Religion.—The religion of the nation is Roman Catholicism. There is an archbishop and four bishops. The clergy are French.

Production.—The chief industries of the republic are those connected with agriculture. Coffee is the chief crop, followed by cocoa and cotton and tobacco. Sugar is also grown and there are now four sugar mills in operation. Rum and other spirits are manufactured for domestic consumption. Logwood and other valuable woods are exported in ever increasing

quantities. The mineral resources of the republic are undeveloped. Concessions for the working of coal, iron and copper have been granted in recent years. Silver, tin, antimony, sulphur, kaolin, nickel, gypsum and porphyry are also known to exist in workable quantities.

Commerce.—The imports of the republic in 1920 were valued at \$27,398,411 and the exports at \$18,990,032. Coffee, logwood and cotton were the chief items among the exports. In the year named the United States furnished 83.12 per cent of the imports and took 52.15 per cent of the exports. France took 34.39 per cent of the exports the same year.

Finance.—The revenue of the republic is derived from the customs almost exclusively and most of the expenditure is for the national debt. In 1920, the revenue was \$5,608,414 gold dollars and 5,011,703 currency gourdes; the expenses, \$3,748,498 gold dollars and 4,602,494 currency gourdes. At the beginning of 1921 the national debt consisted of gold loans aggregating 92,263,260 francs. The internal debt was \$2,263,226; the floating debt, \$3,734,005 and 2,068,988 gourdes.

Communications.—There is good steamer service between the ports of Haiti and New York and other ports of the United States. There are about 200 miles of improved roads radiating from the capital. There is a light railway connecting the capital with Lake Assuei and Leogane. There is also a line under construction from Cape Haiti to the capital. There are cable lines to South America and to Cuba and 124 miles of telegraph lines. Post offices number 31.

Government.—At the head of the state is a President, who is elected by the chambers in joint session for a term of four years, and in whom is vested the executive power.

The legislative power is vested in the Chamber of Deputies, the members of which are chosen for two years by direct popular vote (one member to each 60,000 inhabitants), and in a Senate of 15 members chosen by direct popular vote for terms of six years. The franchise is possessed by all citizens over the age of 21. Five secretaries of state assist the President in the discharge of his executive duties. Since 1915, the republic of Haiti has been virtually a protectorate of the United States. For details of the American occupation see following section on the current history of the republic.

History.—On 10 April 1922, Louis Borno, member of the Hague Permanent Court of Arbitration, was elected President of Haiti for a term of four years beginning 15 May; and he appointed the following Cabinet: Léon Dejean, Secretary of Foreign Relations and Worship; L. A. Guillaume, Secretary of Public Instruction; A. C. Sansaricq, Secretary of the Interior and Public Works; L. Ethéart, Secretary of Finance and Commerce; A. D. Rameau, Secretary of Justice and Agriculture. That

government appointed, as delegate to the Pan-American Conference of Women at Baltimore, Md. (see CUBA; History), a professor at the Normal School of Port-au-Prince. On 7 and 8 May, a national agricultural exposition took place, in Thor, Port-au-Prince. On 9 May a presidential decree made obligatory the use of the metric system of weights and measures in all transactions after 1 July. On 18 May the University of Haiti celebrated the 119th anniversary of the creation of the national flag; in honor of which occasion and emblem the ceremonial exercises (held in a Port-au-Prince theatre) were attended by delegations from primary and secondary schools. On 26 June, at Washington, the indefinite continuance of the American military occupation of Haiti, though with a reduction of the marine force, was recommended unanimously in a report of the Special Senate Committee that had been appointed to investigate the American administrations in Haiti and the Dominican Republic. The next following month, in Haiti, the sum of \$134,737.42 was appropriated for supplementary credits in connection with the budget; and, commendably, the largest item, \$66,467, was allotted to public roads. On 9 July Normil Charles's bust of Toussaint l'Ouverture was unveiled in the square at Port-au-Prince which bears the name of that extraordinary Haitian slave, liberator, patriot. On 26 July a law was passed requiring the registration of foreigners. On 7 August the government's sanction was given to a contract, dated 18 July, between the Secretary of Finance and Commerce of Haiti and the National City Company of New York, by which the government concession made 21 Oct. 1910 to the Banque de l'Union Parisienne, granting it participation in the organization of the Banque Nationale de la Republique d'Haiti, was transferred to the National City Company. On 1 September a presidential decree created, in the Department of Foreign Affairs, a diplomatic council charged with the following duties: To execute the acts of the Pan-American Conferences, to furnish useful information to the Pan-American Union, and to study national questions in order to assure the best course of action on the part of the Department of Foreign Affairs. On 13 October the budget of expenditure was fixed for the first three months of the fiscal year 1922-23. The largest items were: Public Instruction, 442,674.06 gourdes (gourde, \$0.20) and \$17,116.98; Interior, 144,306.44 gourdes and \$358,493.57; Justice, 267,802.38 gourdes and \$7,539; Public Works, 59,835.72 gourdes and \$167,930; Finance and Commerce, 192,560.65 gourdes and \$1,440.64; service of the Receiver General, 34,832.89 gourdes and \$45,258.99. That month, the National City Company of New York placed on the market an issue of \$16,000,000 Republic of Haiti external gold bonds,—the proceeds of said bonds ("Series A," as part of a total authorized loan of \$40,000,000) to be used for refunding two Haitian loans outstanding in France to the amount of 85,838,500 francs, approximately, and to provide funds to pay the internal floating debt and for other governmental purposes, including public works. The total public debt was estimated at \$17,871,471.75. On 30 Octo-

ber the powers of the Claims Commission (established by article 2 of the protocol of 3 Oct. 1919) were prescribed by law, and an account of \$50,000 was opened for payment of salaries and expenses of the Commission, a body having jurisdiction over all financial claims of Haitian or foreign societies, companies, or individuals pending against the Republic. At the end of 1922 the receipts from all taxes, duties, and similar sources to be used for governmental expenditures in the fiscal year 1922-23 were estimated at 4,737,547 gourdes and \$3,721,544. As another year's end theme, we mention the visit beginning in December, of an imported representative of Tuskegee Institute, invited by President Borno to go to Haiti for the closer study of conditions which may not preclude the possibility of establishing vocational schools there, according to the Tuskegee model.

MARRION WILCOX.

HALIDEH EDIB HANOUM, Turkish soldier, educator and writer: b. about 1875. Her father was treasurer to Sultan Abdul Hamid, and was one of the few progressive Moslems of his generation, although he had several wives. He gave his daughter a Western education notwithstanding national prejudices. Her mother is the daughter of the sixth wife of a great pasha and her grandmother was a Circassian slave. Halideh was one of the first Turkish girls to attend Constantinople College, the American College for girls on the Bosphorus. Her professor of mathematics, Salih Bey, fell in love with her, and after her graduation in 1901, married her. Their union was not happy, although she had two sons, and when Salih Bey announced that he was bringing home a second wife, Halideh got a divorce. Her entrance into public life dates from the fall of Abdul Hamid, when more liberty was granted to women. She began to write political articles and essays on education and reorganized the Turkish Normal School for Girls. During the World War Djemal Pasha put her in charge of all the schools in Syria, and her influence with the government prevented taking over the buildings of Constantinople College when the United States declared war on Germany. In 1917 she was married to Dr. Adnan Bey, a physician in Constantinople, who became vice-president of the Parliament at Angora. When the Nationalist Movement started she entered into it with such ardor that she was marked for deportation. While soldiers were searching for her in Stamboul, she and her husband escaped by boat to Asia Minor and traveled on donkeys to Angora, the capital of the Nationalists. Mustapha Kemal welcomed them gladly and made Halideh his Minister of Education and, therefore, a member of his Cabinet. She had the rank of sergeant until 14 Oct. 1922, when she was made a colonel in the National Army. She has often served in the front line trenches, and when not soldiering, or attending to official duties, she spends much time among the Turkish women, teaching them some of the elements of hygiene sadly needed in the Turkish villages. She frequently wears the green turban of the pilgrims to Mecca, but her usual head gear is the *tcharshaf*. Her stimulating presence in the battle line has caused her to be known as

the "Turkish Joan of Arc." She is tall and dark, with almond-shaped eyes of wonderful brilliancy, a voice of musical quality, and a charming manner. While apparently feminine and a product of the Turkish harem when she addresses an audience she is described as a "fire-brand." She has written six novels, prose works, short stories and poems, many of which compositions have been translated into Russian, French and German. Halideh Edib Hanoum is not only one of the most romantic personalities of the day, but she is one of the most potent influences in the New Turkey. An intimate view of this extraordinary Turkish woman is contained in a letter signed "Aghavnic Yeghenian": "She saw her chance for fame and power, as every typical Turk instinctively does, with the beginning of the Armenian persecution, and she began her famous career during some two years she spent in and around Damascus. It was these two years in Damascus that put Halideh Edib Hanoum on her road to Angora and to her present heights of fame as being acclaimed the Turkish Joan of Arc. During this time she became, because of her political opinions and of her stand on the Armenian massacres, the sole close associate of the triumvirate of directors, Enver, Talaat and Djemal. Djemal Pasha, as Director of Syria and as the Supervisor General of the Armenian deportations, was alleged to be the cruellest member of the triumvirate. Halideh Edib Hanoum during this period became the official and chief aid of Djemal Pasha. She lived in the harem of Djemal Pasha during those two years in Aleppo and had charge of the vast members of Armenian orphans who were gathered from the Syrian deserts to Aleppo. This little woman, who so often boasts of her American ideals of womanhood and of which her Western friends make so much, undertook the task of making Moslems of these orphaned children. At the close of the war she was allowed to return to Constantinople, but eventually, because of her past political history she was exiled to Malta. From Malta she escaped to Angora and there married her present husband. Halideh, herself, despite her renowned feminism, is the most typical of harem products.

HALSTED, William Stewart, American surgeon: b. New York City, 23 Sept. 1852; d. Baltimore, Md., 7 Sept. 1922. He was graduated A.B. from Yale University in 1874; M.D. from the College of Physicians and Surgeons of Columbia University in 1877, and studied at the universities of Vienna, Leipzig and Würzburg, 1878-80. In New York City he served as attending physician at the Charity Hospital, 1881-83; as surgeon-in-chief at the Emigrant Hospital, 1881-84; as associate surgeon and surgeon-in-chief of the out-patient department of Roosevelt Hospital, 1881-87, and as attending surgeon at Bellevue and the Presbyterian hospitals, 1885-87. When the Johns Hopkins Hospital was opened in Baltimore in 1889 he was called there as surgeon-in-chief and as professor of surgery in the Johns Hopkins University Medical School. The late Sir William Osler and Dr. Howard Atwood Kelly were called to the institution at the same time. Of the three, Dr. Halsted was the last to continue in active

service. Dr. Osler, who was chosen to head the medical department of Hopkins, resigned in 1904, following his appointment as regius professor of medicine in the University of Oxford, England, where he died in 1919. Dr. Kelly, who was placed in charge of the department of gynecology, retired in 1919. Dr. Halsted's skill as a surgeon was recognized throughout the medical world while to him surgery is indebted for many of its advances. He invented the Halsted forceps, introduced many antiseptic methods in the operating room, including the use of rubber gloves by surgeons; devised various operations which bear his name, was the first surgeon to use the knife in the treatment of goiter and developed neuro-regional or "block" anaesthesia whereby painless dentistry, without complete anaesthesia, was made possible. In 1913, when the General Educational Board gave \$1,500,000 to Hopkins on condition that the heads of the various departments of the Medical School devote their entire time to the institution, Dr. Halsted promptly abandoned private practice and accepted a salary of \$10,000 a year, saying that the opportunity afforded was one he had longed for almost from the beginning of his professional career. The degree of LL.D. was conferred on Dr. Halsted by Yale University in 1904 and by the University of Edinburgh in 1905. Columbia University conferred the degree of Sc.D. upon him in 1904. He was an honorary fellow of the Royal College of Surgeons, England, and also of the Royal College of Surgeons of Edinburgh; member of the National Academy of Sciences; associate fellow of the American Academy of Arts and Sciences; fellow of the American Surgical Association, the American Association for the Advancement of Science, the American Society of Experimental Pathology; foreign corresponding member of the Harveian Society of London, de la Société de Chirurgie, Paris; honorary member of the Deutsche Gesellschaft für Chirurgie; honorary fellow of the American College of Surgeons; member de l'Association Française de Chirurgie; member of the Society for Experimental Biology and Medicine; member of the American Association of Pathologists and Bacteriologists, the American Association of Anatomists; foreign member of the Royal Swedish Academy of Science; honorary member of the Societas Medicorum Sverana, Stockholm. He published numerous papers on surgery, pathology and physiology.

HAMILTON COLLEGE, a non-sectarian educational institution for men, founded in 1812 and located at Clinton, N. Y. Statistics for 1922-23 show a faculty of 30 members, 318 students, property valued at \$1,053,720.90 and an income of \$196,766.71. Frederick C. Ferry, Ph.D., Sc.D., LL.D., is president.

HAMLINE UNIVERSITY, a Methodist Episcopal co-educational institution, founded in 1854 and located at Saint Paul, Minn. In 1922-23 it had a faculty of 37 members, an estimated student enrollment of 600, property valued at approximately \$500,000, an endowment of \$1,015,000, and an estimated income of \$170,000. Samuel F. Kerfoot, D.D., is president.

HAMPDEN-SIDNEY COLLEGE, an educational institution for men, supported by the Presbyterian church but nevertheless, non-sectarian, founded in 1776 and located at Hampden Sidney, Va. In 1922-23 it had a faculty of 13 members including 2 assistants, 217 students, property valued at \$675,000, and an income of approximately \$75,000. Joseph D. Eggleston, LL.D., is president.

HANIHARA, Masanao, Japanese diplomat: b. Japan, 1876. From 1902-11 he was attached to the Japanese Embassy at Washington, becoming known to everyone from Presidents Roosevelt and Taft down to the clerks in the State Department as a congenial, natural person with a keen sense of humor and possessing real ability. In 1916-17 he was Consul General at San Francisco. Later he was made Director of the Bureau of Commerce of the Japanese Foreign Office. Shortly thereafter he again came to the United States, this time as a member of the Ishii Mission which negotiated the Ishii-Lansing agreement. He was next appointed Director of the Bureau of Political Affairs and in 1919 he succeeded Baron Shidehara as Vice Minister of Foreign Affairs. He was one of Japan's representatives at the Washington Conference on the Limitation of Armaments, other members of the commission being Prince Tokugawa, Baron Shidehara and Baron Kato. From the foregoing it will be seen that much of Mr. Hanihara's time has been spent in the United States, and it was no doubt due to his understanding the American ways and American people that he was appointed Ambassador to the United States in December 1922, the youngest Ambassador ever accredited from Japan to this country.

HANOVER COLLEGE, a Presbyterian co-educational institution, founded in 1827 and located at Hanover, Ind. In 1922-23 it had a faculty of 18 members, 605 students, property valued at \$850,000, and an income of \$45,000. William A. Millis, LL.D., is president.

HARBORD, James Guthrie, American Army officer: b. Bloomington, Ill., 21 March 1866. After graduation at the Kansas State Agricultural College, Manhattan, Kan., in 1886, he enlisted as a private in the United States Army at the age of 20. He served in Cuba as a Rough Rider in the Spanish-American War. From 18 Aug. 1903 to 1 Jan. 1914 he was assistant chief of the Philippine Constabulary with rank of colonel. From 14 May 1917 to 5 May 1918, he was Chief of Staff, American Expeditionary Forces in France; commanded the Marine Brigade near Château-Thierry June-July 1918; commanded 2nd Division in Soissons offensive July, 1918; commanded Service of Supply 29 July 1918 to 26 May 1919, and was re-appointed Chief-of-Staff, American Expeditionary Forces, 26 May 1919 and served in this capacity until President Wilson sent him to the Near East as Chief of the Military Mission to Armenia in November 1919. He was awarded the Distinguished Service Medal. In June 1921, Gen. Harbord was made Deputy Chief of Staff, from which he retired 29 Dec. 1922, to become president of the Radio Corporation of America. Following his entrance into business, an effort was

made by the House of Representatives to cut off his pay as a retired Army officer but the Senate refused to concur in the House's action.

HARBORS, Appropriation for the Improvement of. See RIVERS AND HARBORS, APPROPRIATION FOR THE IMPROVEMENT OF.

HARDING ADMINISTRATION. See UNITED STATES, subsection HISTORY.

HARE, Sir John, English actor and theatrical manager: b. London, England, 16 May 1844; d. there, 28 Dec. 1921. His real name was John Fairs. He was educated at Giggleswick Grammar School, Yorkshire, and made his first appearance on the stage at the Prince of Wales Theatre, Liverpool, 28 Sept. 1864. On 25 Sept. 1865 he went to London where he appeared in the entire series of Robertson comedies, as Sir Peter Teazel in 'The School for Scandal,' and in various other parts. He became manager of the Court Theatre 13 March 1875, produced 'Olivia' and other plays. In 1879 he and Kendal took over the management of the Saint James Theatre. Ten years later he became manager of the Garrick Theatre, built for him by Sir W. S. Gilbert. This management he surrendered in 1894. The next few years were spent in touring the provinces and in more than one successful trip to America. In 1898 he returned to London and produced 'The Gay Lord Quex' at the Globe Theatre. He then again went on tour, but in 1903 produced Barrie's 'Little Mary' at the New Theatre. In 1905 he began a long succession of "farewell" tours through the provinces, and in the Spring of 1908, shortly after he had been knighted, gave revivals of 'The Gay Lord Quex' and 'A Pair of Spectacles' as a farewell to the London stage. His last appearances were in 1917 in revivals of 'A Pair of Spectacles.'

HARLAND, Marion. See TERHUNE, MARY VIRGINIA.

HARNES RACES. See SPORTS.

HARRIS, George, American educator: b. East Machias, Me., 1 April 1844; d. New York City, 1 March 1922. He was graduated with the degree of A.B. from Amherst College in 1866 and in 1869 was graduated from Andover Theological Seminary. In the latter year he was ordained to the Congregational ministry and became pastor of the High Street Church, Auburn, Me., holding the pastorate until 1872 when he became pastor of Central Church, Providence, R. I. This latter pastorate he held until 1883 when he became professor of Christian theology at Andover Theological Seminary, remaining there until 1899 when he was elected president of Amherst College. He resigned the presidency of Amherst in 1912 and was made president emeritus. He received the degree of D.D. from Amherst, Harvard and Yale, and LL.D. from Dartmouth, Williams and Wesleyan. He wrote 'Moral Evolution' (1896); 'Inequality and Progress' (1897); 'A Century's Change in Religion' (1914), and was one of the editors of the Andover Review from 1884-93.

HARVARD BUREAU OF BUSINESS RESEARCH. The Harvard Bureau of Business Research was established in 1911 to gather reliable, up-to-date information regarding every-

day business methods and problems. While sought primarily for teaching purposes in the Graduate School of Business Administration, Harvard University, this information has proved to be of immediate value and practical application for business men. The results of this research are published in bulletins that are furnished without charge to each merchant who sends in a report on his business. Because of the interest that has been shown, the bulletins are also sold at the stated prices, the receipts being used solely to cover a portion of the expense of collecting and publishing the data. Many manufacturers, merchants and other business men already have utilized the results of this research to advantage. Each of the bulletins on operating accounts explains how to make out an accurate profit and loss statement for a firm in the trade for which it has been prepared. The accounts are arranged so as to show clearly the gross profit, the various items of expense, and the net profit of the business. This method of keeping accounts may be used with a variety of book-keeping systems. Some merchants have double-entry books; other retailers simply use record sheets, such as are described in the bulletins. In the bulletins on operating expenses the reports that have been received confidentially from groups of representative firms throughout the country are summarized. The tables show average figures for the various items for expense and profit. The bulletins contain also numerous suggestions regarding problems on store management, and in some cases, as with the methods of stock-keeping in retail shoe stores, special bulletins have been published covering the subject. In the bulletins on operating expenses in 1920 and 1921 detailed analyses are made showing the relation of stock-turn to expenses. Operating expenses summarized according to the geographical districts in which the firms are located, as well as according to the volume of sales, also are given in the latest bulletins. The research conducted by the Bureau up to the present time has covered retail shoe, grocery, hardware, drug, jewelry, and department stores, and the wholesale grocery business. The bulletin on labor terminology is a dictionary of terms in common use in labor relations, as defined from the labor standpoint. Such terms as open shop, closed shop, preferential shop, boycott, differential piece-rate system, and standard time are defined. Examples are given of the organization of the American Federation of Labor, national and international unions, district councils, allied trade councils, local unions, industrial councils, and shop committees. The bulletin on International Comparisons of Prices of Cotton Cloth, January 1919-March 1920, gives the weekly prices of cloth in the United States, England, India, and China with a full explanation of the method by which these comparisons were worked out. For the last year and a half the Harvard Bureau of Business Research has been engaged actively in the collection of problems for teaching purposes in the Graduate School of Business Administration. The problems, or cases, collected are those that come before executives for decision. They have been obtained in such subjects as advertising, marketing, retail store management, industrial accounting, industrial man-

agement, labor, commercial banking, investment banking, foreign trade, lumber, statistics, and sales management. As a result of this work several problem books already have been published by members of the faculty of the Business School. Melvin T. Copeland, professor of marketing in the Harvard Business School, is director of the Bureau; Richard Lennihan, assistant director; M. P. McNair, in charge of cost research, and Mary E. Osgood, secretary.

MELVIN T. COPELAND,
Director.

HARVARD COLLEGE, a non-sectarian institution of higher learning for men, though co-educational in the Graduate School of Education. It was founded in 1636 and is the oldest educational institution in the United States. It is located at Cambridge, Mass. In 1922-23 the teaching staff numbered 1,009 members, while the number of students enrolled was 6,357. No information was available as to the value of the college's property and its income. A. Lawrence Lowell, Ph.D., LL.D., is president. For information as to Harvard School of Public Health, see ROCKEFELLER FOUNDATION.

HASA, Emirate of. See ARABIA.

HASTINGS COLLEGE, a Presbyterian co-educational institution, founded in 1882 and located at Hastings, Neb. In 1922-23 it had a faculty of 28 members (college 16, special and academy 6, conservatory 6), 595 students (college 395, others 200), property valued at \$525,000 and an income of \$98,500. Rev. Calvin H. French, D.D., LL.D., is president.

HAUSEN, BARON Max von, German military officer: b. Dresden, Germany, 12 Dec. 1846; d. there, 20 March 1922. He inherited his title from his father who died in 1879. As a cadet he fought in the Saxon army against Prussia in 1866. From 1871 to 1874 he taught in the military academy at Berlin and from 1875-87 he was attached to the general staff of the German army. In 1902 he held the portfolios of State and War in the Saxon Cabinet. When the World War started he was in command of the German 12th Army Corps with headquarters at Dresden. He commanded the Third Saxon army at the battle of the Marne and spent the latter years of his life in an effort to clear himself of the accusation of having ordered the bombardment which almost destroyed the Rheims cathedral. In the attempt to reach Paris the Third army, with General von Buelow's Second army on its right, reached Rheims 3 Sept. 1914 and captured several of the forts without opposition. On that day, according to von Hausen, who had been promoted to lieutenant-general, the Prussian guard under von Buelow, began to bombard the city and "on 4 September the guard bombarded Rheims for two hours, damaging the cathedral. After the bombardment von Buelow sent word that he had imposed a fine of fifty million francs which would be increased to one hundred million if the courier were not released in two days." According to von Hausen, the missing courier had not reached Rheims which meanwhile had been firmly held by the Saxons. Von Buelow and his friends maintained that as soon as he took Rheims von Hausen should have so informed the commander of the Second army, in

which case there would have been no bombardment.

HAVERFORD COLLEGE, an educational institution for men under the control of the Society of Friends, founded in 1833 and located at Haverford, Pa. In 1922-23 it had a faculty of 25 members, 210 students, real property valued at \$3,000,000 and \$3,250,000 in funds, and an income of \$260,000. William Wistar Comfort, Ph.D., LL.D., is president.

HAWAII, Territory of, a group of 20 islands, of which nine are inhabited, lying in the North Pacific Ocean, 2,089 miles west of San Francisco. The area of the group is 6,449 square miles, of which the island of Hawaii has 4,016; Oahu, 598; Maui, 728; Kauai, 547; Molokai, 261; Lanai, 140; Niihau, 73; Kahoolawe, 44, and Molokai, 217 square miles. The population of the Territory on 1 Jan. 1920 was 255,912, as compared with a population of 191,909 in 1910. On 20 June 1922, the population was estimated by the board of health to be 284,538. The population of the islands by races is as follows: Hawaiian, 23,723; Asiatic Hawaiian, 6,955; Caucasian Hawaiian, 11,072; Portuguese, 2,702; Porto Ricans, 5,602; Spaniards, 2,430; other Caucasians, 19,708; Chinese, 23,507; Japanese, 109,274; Filipinos, 21,031; Koreans, 4,950; negroes, 348, all others, 310. The total number of steerage arrivals during the year ending 30 June 1922 was 15,756, and the number of departures, 10,464. The laborers on the sugar plantations in May 1922 by nationalities were as follows: Americans, 932; Hawaiians, 966; Porto Ricans, 1,715; Portuguese, 2,533; Spaniards, 172; Filipinos, 18,189; Japanese, 16,992; Chinese, 1,487; Koreans, 1,170; Russians, 10, and all others, 236.

Religion.—Practically all the natives are Christians. At Honolulu there are an Anglican bishop and a Roman Catholic bishop.

Education.—Primary education is free and English is the language in general use in the schools, of which there are in the Territory 173, with 1,431 teachers and 44,393 pupils. There are 63 private schools, with 436 teachers and 8,068 pupils. Of the pupils in public schools in 1922, 43,160 were born under the United States flag, while 1,233 were foreign born. In addition, there are a normal and training school, two reformatory industrial schools, the McKinley high school, several junior high schools, a Territorial trade school and a school for the deaf and blind. For higher education there is a Territorial university.

Finances.—Local governments in Hawaii were first established 1 July 1905, when the Territory was divided into four counties. On 1 Jan. 1909 the county comprising the island of Oahu was converted into a city and county known as the city and county of Honolulu, with a mayor. The other counties are Hawaii, including the island of that name; Maui, including the islands of Maui, Kahoolawe, Lanai and all of Molokai except the leper settlement; and Kauai, including the islands of Kauai and Niihau. The leper settlement on Molokai constitutes a fifth county, Kalawao, but is under the control of the Territorial board of health. In 1922 the income of the various counties aggregated \$6,399,177.46. The assessment of property, real and personal,

in the Territory aggregated \$271,662,484. The total revenue collected by the Territory aggregated \$11,353,811.30 and the total disbursements aggregated \$13,157,109.24. The net cash balance on 30 June 1922 was \$1,333,285. The total bonded debt on 30 June 1921 was \$12,600,000, which was increased by the sale of \$739,000, the balance of the 1920 4½ per cent Public Improvement bond issue of \$2,400,000, and \$1,350,000 of the 1 June 1922 issue of 4½ per cent Public Improvement bonds. The debt was decreased during the year by the payment of \$40,000 of the 1919 issue of 5 per cent Memorial Park bonds, leaving the bonded debt as of 30 June 1922 at \$14,649,000.

Banking.—At the close of the year 1922 there were 28 banks in operation. Two are national banks, one bank is solely a savings bank, one is solely commercial and the remainder are both commercial and savings banks. Bank deposits at the end of the year amounted to \$46,243,481.36, of which \$28,379,489.19 were commercial deposits and the remainder, \$17,863,992.17, were savings deposits. The savings accounts by races were as follows: Japanese, 15.73 per cent; Chinese, 12.70 per cent; Hawaiian, 7.31 per cent; Portuguese, 12.48 per cent, and all others, 51.78 per cent.

Production.—While the islands are to a very great extent mountainous and volcanic, the soil is very fertile. The census of 1920 reported 5,284 farms with an aggregate acreage of 2,702,245, of which 435,242 acres were improved land. The value of all farm property was \$151,129,085. Sugar and pineapples are the staple crops, but coffee, bananas, rice, tobacco and cotton are also grown. The yield of sugar for the calendar year 1922 is estimated at 546,844 tons, and the yield of pineapples at 5,000,000 cases. During the year, agricultural labor conditions continued serious. There was a great shortage of field labor, which was partially compensated for by abandoning land formerly under cultivation. A resolution known as the Hawaii Emergency Labor Resolution was introduced into Congress. This provides that if in the opinion of the President and the Secretary of Labor there shall exist a labor emergency in Hawaii, additional laborers may be allowed to enter the Territory for a limited period of time, under special restriction, and such admission does not carry the privilege of passing from Hawaii to the mainland of the United States. Sugar plantations of the Territory are supplied by numerous irrigation canals. There are 47 forest reservations in the Territory. The second industry of the Territory is the canning of pineapples, practically no fresh pineapples being shipped. About 120,000 acres are planted to sugarcane and about 45,000 acres to pineapples. In addition to the field crops mentioned above, hides, sisal and honey are among the exports of the islands.

Commerce.—The importance of the Hawaii Islands as a centre of trans-Pacific business is evidenced by the steady increase in tonnage entering the island ports. The gross tonnage of all vessels entering the Territory in the fiscal year ending 30 June 1922 was 6,090,145 tons, the greatest in the history of the Territory. Passenger service was rapidly enlarging during the year and direct service between Los Angeles and

Honolulu with fortnightly sailings was inaugurated. Imports for the year ending 31 March 1922 amounted to \$64,042,740, including \$56,223,067 from the mainland of the United States and \$7,819,673 from foreign countries. Exports totaled \$72,748,243, of which \$71,615,805 were to the mainland of the United States and \$1,132,438 to foreign countries. Sugar, pineapples, coffee and rice made up the bulk of the exports. The imports were chiefly iron and steel manufactures, petroleum and its derivatives, breadstuffs, dairy and meat products, lumber, textiles, rubber goods, paper, automobiles, leather and fertilizers.

Communications.—On the Island of Hawaii there is an excellent system of roads. In the entire territory there are 354 miles of steam railways, not including about 650 miles of private railways on the sugar plantations. Honolulu, the capital (population 83,327) has a fine harbor, which has been enlarged and dredged to a depth sufficient to admit the largest steamships afloat. Hilo, the second city of the territory, has a population of 10,431, and a breakwater has been constructed on one side of its bay. Hilo is an important sugar shipping port. Within the last decade, several lighthouses and other aids to navigation have been set up about the islands. There is steamship communication with the United States, Australia, Canada, the Philippines, China and Japan. Twelve small steamers owned by one company provide communication between the several islands. Honolulu has an electric tramway system, and much concrete construction is used in its streets. The city is lighted by electricity. There are telephone systems on all principal islands and wireless stations are in operation between the islands for commercial purposes and for communication with the mainland of the United States. The territory is connected by cable with both shores of the Pacific Ocean.

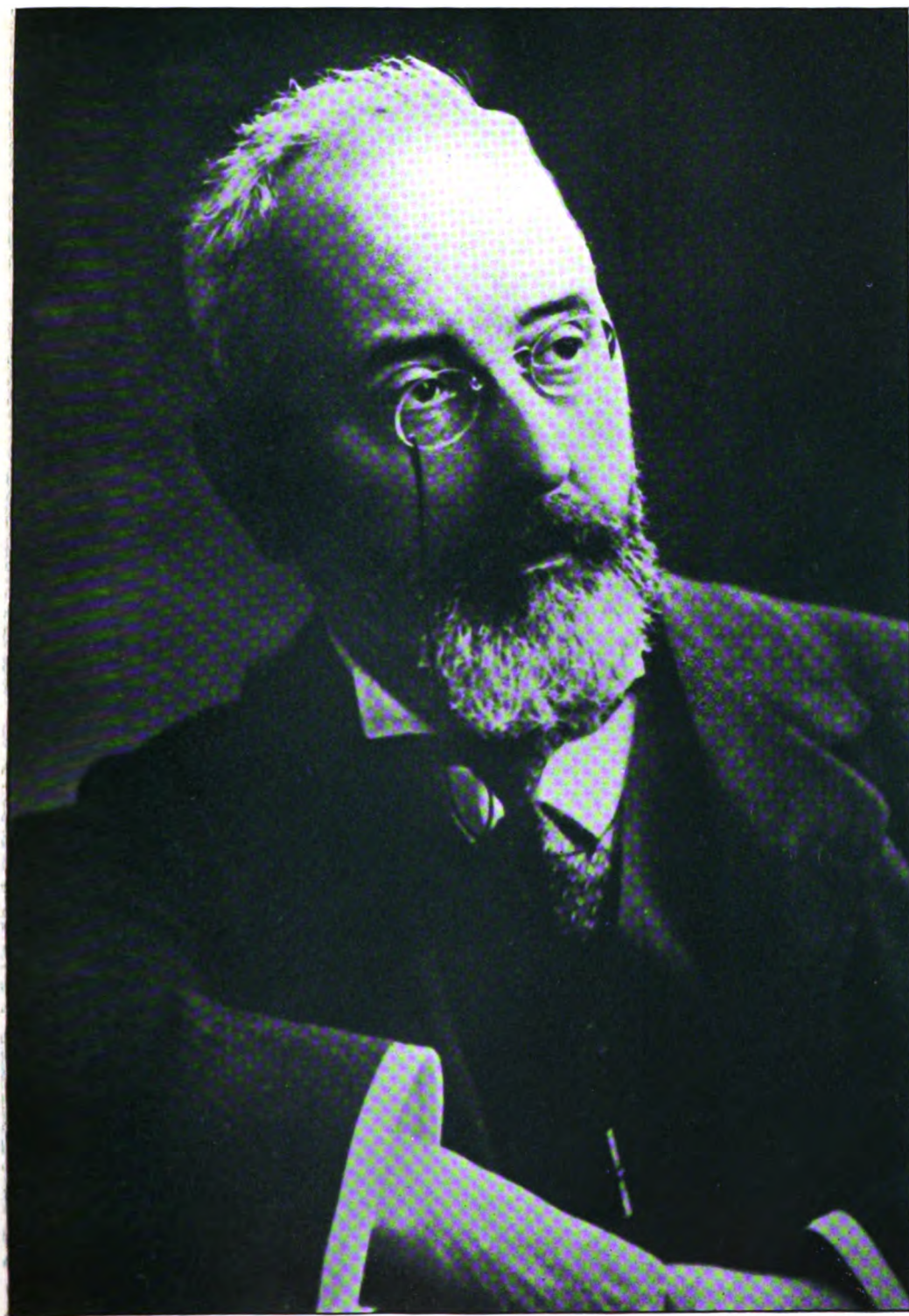
Leprosy.—On 30 June 1921 there were 481 leper patients at Kalaupapa. One patient was admitted there during the year and there were 43 deaths, leaving 439 patients. On the same date, Kalihi Hospital had a total of 142 patients. There were 106 admissions, while 41 were discharged or died, leaving 207 patients at the close of the year. There were 26 patients paroled from Kalihi Hospital. The Kalihi Boys' Home for the children of leprosy parents had in 1922, 43 boys of from two to 18 years of age. The Kapiolani Girls' Home for children of leprosy parents had a total of 65 girls.

Government.—Hawaii is a territory of the United States. The executive power is vested in a Governor, appointed by the President for four years, with the approval of the Senate. The appointee must be a resident of the territory in order to qualify for appointment. The Secretary of the Territory is appointed in the same manner, but the heads of departments are appointed by the Governor with the approval of Territorial Senate. The territorial legislature consists of two houses, a Senate of 15 members, elected for four years, and a House of Representatives of 30 members, elected for two years. Sessions of the legislature are held biennially and are limited to 60 days. In the Federal Congress the Territory is represented by a delegate elected for two years, who enjoys the privileges of the House

of Representatives, but may not vote. The Territorial judiciary is composed of a Supreme Court, four circuit courts and several district courts. The justices of the Supreme Court and circuit courts are appointed by the President of the United States with the consent of the Senate. During the fiscal year, ending 30 June 1922, Hawaii paid into the United States Treasury a total of \$16,597,017.10 in Federal taxes. Of this amount, \$15,520,853.98 was collected through the United States Bureau of Internal Revenue, and \$1,076,163.12 was collected in customs duties at the ports of the territory. The Governor of the territory is W. R. Farrington, who was appointed in 1921 for a term of four years. The Territorial Secretary is Raymond C. Brown.

HAWAII, University of, a non-sectarian co-educational institution, founded in 1907 and located at Honolulu, Hawaii. In 1922-23 it had a faculty of 44 members, 539 students, property valued at \$973,591 and an income of \$174,000. Arthur L. Dean, Ph.D., is president.

HAY. According to the final estimate of the Department of Agriculture, the 1922 hay crop of the United States totaled 112,791,000 tons—96,687,000 tons of tame hay and 16,104,000 tons of wild hay. These figures compare with 82,379,000 tons of tame and 15,391,000 tons of wild hay produced in 1921; 87,855,000 tons of tame and 17,460,000 tons of wild hay produced in 1920. The tame hay crop of 1922 was valued at \$1,217,044,000, compared with \$997,527,000 in 1921 and \$1,560,235,000 in 1920. The wild hay crop of 1922 was valued at \$114,635,000, compared with \$101,991,000 in 1921 and \$198,115,000 in 1920. The acreage for the three years was as follows: Tame, 1922, 61,208,000; 1921, 58,769,000; 1920, 58,101,000—Wild, 1922, 15,842,000; 1921, 15,632,000; 1920, 15,787,000. The average yield per acre of tame hay in 1922 was 1.58 tons, compared with 1.40 tons in 1921 and 1.51 tons in 1920. The average yield per acre of wild hay during the same years was 1.02, .98 and 1.11 tons respectively. New York leads the States in production of tame hay with a total yield of 6,818,000 tons, compared with 4,895,000 tons in 1921 and 6,119,000 tons in 1920. Wisconsin came second with 5,553,000 tons, compared with 4,136,000 tons in 1921 and 5,209,000 tons in 1920. Illinois was third with 5,285,000 tons in 1922, compared with 3,743,000 tons in 1921 and 3,850,000 tons in 1920. California was fourth with 5,059,000 tons compared with 5,003,000 tons in 1921 and 4,945,000 tons in 1920. The average price of tame hay on the 1 December was given as \$12.59 per ton, compared with \$12.11 and \$17.76 on the corresponding dates of 1921 and 1920. South Dakota led in the production of wild hay in 1922 with a total of 3,308,000 tons, compared with 2,800,000 tons in 1921 and 4,049,000 tons in 1920. North Dakota was second with 2,592,000 in 1922, compared with 2,308,000 tons in 1921 and 2,193,000 tons in 1920. Minnesota was third with 2,505,000 tons in 1922, compared with 2,602,000 tons in 1921 and 2,674,000 tons in 1920. The average price per ton of wild hay on 1 December was given as \$7.12, compared with \$6.63 on the same date of 1921 and \$11.35 on 1 Dec. 1920. On 6 Jan. 1923 the Department of Agriculture issued a statement in which it said



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TIMOTHY M. HEALY
First Governor-General of the Irish Free State

that although the total production of hay in 1922 was estimated at about 15,000,000 tons more than in 1921, the increase was principally in timothy. At that time it was said the marketable surplus of alfalfa was being rapidly consumed. Drought in the Southwest curtailed the production of alfalfa, and also created an unusually large demand which was reflected in the price trend. At the beginning of the crop year, about 15 Sept. 1922, number 1 alfalfa was quoted at the principal markets at an average of \$21.50 per ton. On 15 December the average price was \$23.75 per ton. This was \$1 per ton higher than the average price of number 1 alfalfa on 15 Dec. 1921. Timothy prices on the other hand experienced a downward trend and the average price of number 1 timothy at the principal markets on 15 Dec. 1922 was \$21.50 per ton, compared with \$22.50 per ton on 15 Dec. 1921. The car situation was an important factor in the movement of hay during the last crop year. Shippers in most of the surplus hay producing States reported that cars had been very scarce and that, generally speaking, sufficient cars had not been available to move the hay as rapidly as desired. The car shortage was not as pronounced in the Southwest as in certain other sections and this, together with the special rate from the Western alfalfa producing States into the Southwest, no doubt was the principal contributing factor in the heavy movement of alfalfa hay.

HEALTH BOARD, International. See ROCKEFELLER FOUNDATION.

HEALTH SERVICE, United States Public. See PUBLIC HEALTH SERVICE, UNITED STATES.

HEALY, Timothy Michael, first Governor-General of the Irish Free State: b. 1855. He is the son of Maurice Healy guardian of the poorhouse at Bantry, Cork, and is one of three brothers, all lawyers and all members, at one time or another, of the British House of Commons. "Tim" Healy himself represented Wexford, from 1880 to 1883; County Monaghan from 1883 to 1885; South Londonderry, 1885-86; North Longford, 1887-92; North Louth 1892-1910 and Northeast Cork, 1910-18. He began his career as a Home Ruler and Nationalist, who followed Parnell, but when Parnell's divorce was declared in 1889, he was included among the majority of Nationalists who, under pressure of Gladstone and their own Catholic bishops, repudiated that leader. Redmond still stood by Parnell and was ultimately reconciled with Dillon, with whom and Joseph Devlin of Belfast he led the Nationalists during the fateful years when the Asquith home rule act was placed on the statute book—not however to come into effect, owing to the World War and the resistance of Ulster. Healy never joined Redmond, but led a small party of his own which included William O'Brien. In debate he was bitter of tongue, though kindly and gentle in private life; and his many witticisms, chiefly at the expense of his "friends" from Ireland, won for him a world wide fame as dialectician. "I have no desire to head a party," he would say. "My temper is too short, and I have not the talents of intrigue necessary." Again, "the English are notoriously deaf, unless stirred by

concussion." For calling Kitty O'Shea, who became Mrs. Parnell, "an English prostitute," he was knocked down in the Four Courts of Dublin and horsewhipped by Parnell's nephew. Apart from politics, Healy's career may fairly be described as English. At the age of 17, he went to Newcastle-on-Tyne, where his knowledge of shorthand enabled him to serve as railway clerk. It was here that he earned the somewhat inaccurate soubriquet of "the ticket nipper." In 1874, he heard from the strangers' gallery, his first debate in the House of Commons. About the year 1877, when he was 22 years old, he reported Parliament for his uncle's Dublin paper, *The Nation*, and acted as its correspondent at Westminster. In the mornings he read law, and in 1884, he was called to the Irish bar, "taking silk," there or becoming Queen's counsel in 1899. In 1903, like many another Irish barrister—Lord Carson, for instance, and the late Lord Russell of Killowen—he tried his luck by joining the English bar. In 1910, he there became King's counsel and a bencher of Grays Inn. His practice was by no means phenomenal but he achieved a sufficient success.

While his mordant irony weakened the influence of Redmond and the Nationalists, Healy was never himself a Sinn Féiner. Educated as a boy by the Christian Brothers, he has been throughout life, a devout Roman Catholic and on many occasions, it was understood that his attitude represented the views of the hierarchy. For church schools, he has been particularly zealous. In London, he belongs, not only to the National Liberal Club, but to the more exclusive Reform Club. In 1882, he married Erina, daughter of the late T. D. Sullivan, M.P., by whom he has had a family of three sons and three daughters. His official residence in Dublin is the Viceregal Lodge in Phoenix Park, where he enjoys a salary of £10,000 (\$50,000) a year. As governor general, he has refused any of the titles usual to such an office, under the British Crown. "I hope," said he, "the people will continue to call me Tim Healy, but if any one addresses me as 'your excellency,' I will consider it a matter of courtesy and overlook it." He was not asked to kiss the King's hand, on which omission, perhaps, the most delightful comment was made by the Irishman who remarked, "Twas afraid, was King George, that if he gave Tim his hand to kiss, Tim wud bite it." Such anecdotes possess a certain historical significance as illustrating the revolution suggested by the presence of Tim Healy in the halls where dukes, marquises and earls reigned as viceroys. Neither the practice of law nor his political activities have prevented Mr. Healy from at times turning his hand to literature. He has published 'Stolen Waters,' 'A Word for Ireland,' 'Loyalty Plus Murder,' 'Why Ireland Is Not Free,' 'The Great Land of Ulster,' and 'The Planters Progress.'

PHILIP WHITWELL WILSON.

HEIDELBERG UNIVERSITY, a co-educational institution under the auspices of the Reformed Church in United States, founded in 1850 and located at Tiffin, Ohio. In 1922-23

it had a faculty of 31 members, 396 students, property valued at \$956,624, and an income of \$92,000. Charles Erwin Miller, LL.D., is president.

HEJAZ, Kingdom of. See ARABIA.

HELIGOLAND, an island in the North Sea ceded by England to Germany in 1890 and strongly fortified by the latter. Under the terms of the Treaty of Versailles of 1919 the fortifications were ordered dismantled and the work was carried out under Allied supervision. It was alleged in April 1923 that the constant explosion of dynamite incident to the destruction of the fortifications was causing a rapid disintegration of the red and white sandstone of the island.

HEMORRHAGIC SEPTICEMIA, an infectious disease, attended with a very high mortality, which attacks various species of animals, especially cattle, sheep, and swine. It is caused according to the United States Bureau of Animal Industry, by an organism (*Bacillus bipolaris septicus*) belonging to the group in which the bacilli of chicken cholera, swine plague, and rabbit septicemia are to be found. This group is known also by the name of Pasteurella. Bacilli which resemble closely the organism of hemorrhagic septicemia are widely distributed in nature. They have been found in the soil, upon various plants, in stagnant water, and upon the moist nasal membranes of normal calves and hogs. In several instances these seemingly harmless organisms have been so increased in virulence by passing through animals that they finally proved to be fatal when injected into pigs, and in those instances the tissue changes, which were found at the autopsy of the pig, were similar to those found in swine that had died from swine plague. The losses occasioned by hemorrhagic septicemia are greatest among young animals, especially those that are thin in flesh and poorly nourished. The disease is a septicemia or poisoning of the blood, wherefore it often runs a short course and the animal dies quickly. In cattle the disease is sometimes termed stockyards fever. In hogs it is known as swine plague, and the acute form usually is fatal a few hours after the appearance of the first symptoms. In sheep the disease frequently manifests itself in the acute form, with marked depression, high temperature, labored breathing, muscular trembling, and colicky pains. Fowl cholera represents the avian or bird form of hemorrhagic septicemia, pigeons and geese being quite as susceptible as other species of poultry. No form of treatment has time to become effective for any animals that may be affected. The apparently healthy animals should be separated from the diseased and placed in clean, uninfected quarters, where they should have the best of feed and water. Bacterial vaccines have proved to be effective in many instances in checking the spread of an outbreak and in protecting the unaffected portion of the herd or flock. The advisability of using these products should be left to the discretion of a competent veterinarian. Consult Farmers' Bulletin 1018 of the United States Department of Agriculture.

HENDERSON-BROWN COLLEGE, a Methodist co-educational institution, founded in

1890 and located at Arkadelphia, Ark. In 1922-23 it had a faculty of 24 members, 328 students, property valued at \$336,000 and an income of \$90,000. J. M. Workman, A. B., LL.D., is president.

HEPBURN, A(lonzo) Barton, American lawyer, banker, philanthropist and author: b. on a farm near Colton, N. Y., 24 July 1846; d. New York City, 25 Jan. 1922. Following his graduation from Middlebury College in 1871 with the degree of A.B., Mr. Barton, for a time, was instructor in mathematics at Saint Lawrence Academy and thereafter was principal of the Ogdensburg (N. Y.) Educational Institute. In the meantime he studied law and, upon his admission to the bar, began practice at Colton. Entering the political arena in 1875, he was elected to the Assembly of New York that year and continued to serve as a member thereof until 1880 when he was appointed superintendent of the State banking department which position he held until 1883. He next engaged in the lumber business, having several years before acquired an extensive tract of timber land. In 1888 he was appointed a national bank examiner for the State of New York and served in that capacity until 1892 when he was called to the Treasury Department as Comptroller of Currency. He relinquished the latter position in 1893 when he was elected president of the Third National Bank of New York City. From that time until his death Mr. Barton devoted his time and energies almost exclusively to the banking business, developing into not only one of the leading financiers of his day but also into one of the country's real authorities on finance whose books on financial matters soon won recognition as standard publications. Mr. Barton left the Third National Bank in 1897 to become vice-president of the National City Bank of New York City. Two years later he was chosen president of the Chase National Bank of New York, thereby establishing a connection which continued until his death. He served as president of the Chase National Bank until 1911 when he was made chairman of the bank's board of directors. In 1918 he became chairman of the bank's advisory board and held that position until his death. Mr. Hepburn was also a director of the Columbia Trust Company, the New York Life Insurance Company, the American Agricultural Chemical Company, the American Car and Foundry Company, the Safety Car Heating and Lighting Company, Sears, Roebuck and Company of Chicago; the Studebaker Corporation, the Texas Company, F. W. Woolworth Company, and the Great Northern Railway Company. He was also a trustee of Middlebury College, the Rockefeller Foundation, Columbia University and the New York Zoological Society. He was a member, and at one time was president, of the New York Chamber of Commerce, a member and former president of the New England Society, member of the Saint Andrews Society, The Pilgrims and the Burns Society. He was chairman of the currency committee of the American Bankers' Association from its creation in 1896. In 1912 he was made an officer of the Legion of Honor of France. At various times he served as president of the Academy of Political Science, the New York Clearing House

Association and the National Currency Association. In 1907 and 1913 he served as chairman of commissions appointed for the purpose of revising the banking laws of the State of New York. In 1918 he was appointed a member of the advisory council of the Federal Reserve Board. The following year he was made a member of the governor's commission to study necessary legislation for the protection of the public in the purchase of securities. In 1919, also, he served as a member of the International Trade Conference, being a member of the committee on finance and credits.

He was a member of the Delta Kappa Epsilon and Phi Beta Kappa Greek-letter fraternities and of the following clubs: University, Columbia University, Union League, Bankers', France-America, Economic, Camp Fire, Recess, Saint Andrews Golf, National Golf Club of America, the Links, Authors, Japan Society and the Century. The degree of LL.D. was conferred upon him by Middlebury College (1894), Columbia University (1911), Williams College (1911), University of Vermont (1915) and New York University (1919). Saint Lawrence University conferred the degree of D.C.L. upon him in 1906. Despite his numerous business activities, Mr. Hepburn found time to write a number of books. His published works include: 'History of Coinage and Currency' (1903), 'Artificial Waterways and Commercial Development' (1909), 'Story of an Outing' (1913), and 'A History of Currency in the United States' (1915). He also contributed to magazines and reviews. Mr. Hepburn's benefactions, largely contributions to educational institutions, totaled several millions of dollars. Those made during his lifetime included \$600,000 to the A. Barton Hepburn Hospital, Ogdensburg, N. Y.; \$60,000 to the Imperial University of Tokio, Japan, to found a chair of American history and government; \$500,000 to libraries in various towns in Saint Lawrence County, N. Y.; \$5,000 to the Tuskegee Institute; \$150,000 to Princeton University; \$650,000 to Middlebury College; \$130,000 to Wellesley College; \$130,000 to Williams College; \$50,000 to New York University School of Commerce; \$75,000 to Saint Lawrence University; \$350,000 to Columbia University School of Business and \$225,000 to the New York State Chamber of Commerce.

HERRIN MURDERS. See STRIKES AND LOCKOUTS.

HERZEGOVINA. See BOSNIA AND HERZEGOVINA.

HESSE, one of the states of the German Republic and a former grand duchy. Area, 2,968 square miles; population, 1,291,249. Capital, Darmstadt with a population of 82,368. Mainz (pop. 107,930) is the largest city. There is an executive ministry of four and a Landtag or Diet of 70 members. See GERMANY.

HESSIAN FLY. See ENTOMOLOGY, UNITED STATES BUREAU OF.

HIDES AND LEATHER. Secretary of Commerce Hoover, writing in January 1923, of the leather industry, stated that the total leather production of the country in 1922 was slightly under the 1921 figure. This indicates a very depressed condition of the tanning, currying and

finishing of leather factories. Their 1921 production was only \$383,365,000, falling 58.7 per cent below the total of \$928,592,000 in 1919. There appears to have been over-production especially of sole leather, in 1919, and it has taken two years of depression to work off this stock. In no other way can one account for the singular fact that upper leather production in 1922 exceeded sole leather production by 30 per cent. Ordinarily, a man ought to wear out two pair of soles to one pair of uppers. Leather exports increased in 1922, especially in shoe uppers, but the outgo was far from sensational.

The *Leather Manufacturer* makes the following estimate of the number of raw hides in the United States during recent years:

On 31 Dec. 1919, 7,300,000; on 28 Feb. 1921 (peak), 7,940,000; on 30 June 1922, 5,347,000; on 31 Oct. 1922, 5,480,000.

The average monthly import of hides in the same years was: 1919, 910,000; 1921, 313,000; 1922, 508,000. The stocks of leather in the hands of tanners, curriers, dealers, manufacturers, etc., is much greater than the raw stock. The estimates are:

Leather Stocks in United States.

DATE	Number of hides
31 Dec. 1920.....	15,939,000
30 June 1921 (peak).....	16,951,000
31 Dec. 1921.....	15,837,000
30 June 1922.....	15,576,000
30 Oct. 1922.....	14,425,000

The rate of leather production during the months of August, September and October, 1922, as measured in hides, was per month: Sole leather, 758,000; belting leather, 93,000; upper leather, 950,000; total monthly hide consumption, 1,801,000.

From the foregoing it is evident that leather manufacturers are carrying eight months supply of raw material, and that dealers in raw hides carry three months supply ahead of this. That this production is "back to normalcy" is suggested by the fact that prices of leather have stiffened and are stiffening, following a rise in the price of hides in the latter part of 1922.

HIDE AND LEATHER EXPORTS FROM UNITED STATES

	1921 Pounds	1922 Pounds
Hides and skins.....	30,577,000	28,700,000
Leather.....	\$4,067,000	\$4,019,000
Leather manufactures (mostly shoes).....	31,787,000	45,473,000
	29,418,000	16,711,000

Massachusetts still leads as the foremost State in leather production, followed closely by Pennsylvania, New York and New Jersey. There is also moderate production in Illinois, Wisconsin, Michigan, California and Ohio. There are 680 establishments in the country, giving employment to about 65,000 people.

HIGHLAND COLLEGE, a non-sectarian co-educational institution, founded in 1857 and located at Highland, Kan. In 1922-23 it had a faculty of five members, 35 students, property valued at \$150,000 and an income of \$12,000. James L. Howe, Ph.D., LL.D., is president.

HILLSDALE COLLEGE, a co-educational institution—Baptist in origin and affiliation—founded in 1844 and located at Hillsdale, Mich. Statistics for 1922-23 show a faculty of 27 members, 513 students and property valued at \$212,489.42. Income for the year ending April 1922 was \$89,432.27. William Gear Spencer, M.A., is president.

HIRAM COLLEGE, a co-educational institution, fostered by Disciples of Christ, founded in 1850 and located at Hiram, Ohio. In 1922-23 it had a faculty of 28 members, 364 students, property valued at \$460,000 and an income of \$120,000. Miner Lee Bates, LL.D., is president.

HISTORICAL ASSOCIATION, American. Membership in 1922 totaled 2,500. The president is Charles H. Haskins of Harvard University and the secretary, John Spencer Bassett of Smith College, Northampton, Mass. Headquarters of the Association are in the Woodward Building, Washington, D. C.

HOBART COLLEGE, an Episcopal educational institution for men and women (women's department called William Smith College), founded in 1822 and located at Geneva, N. Y. In 1922-23 it had a faculty of 26 members, 375 students, and property valued at \$1,214,000. Income figures not given. Murray Bartlett, D.D., LL.D., is president.

HOCKEY, Ice. See SPORTS.

HOG CHOLERA. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF; VETERINARY MEDICINE AND SURGERY.

HOGS. See AGRICULTURE IN THE UNITED STATES.

HOLLAND. See NETHERLANDS, THE.

HOLLINS COLLEGE, a non-sectarian educational institution for women, founded in 1842 and located at Hollins, Va. In 1922-23 it had a faculty of 33 members, plus 10 other officers, 334 students, and property valued at \$625,000. Income figures not given. Matty L. Cooke, Litt.D., is president.

HOLY CROSS COLLEGE, a Roman Catholic educational institution for men, founded in 1843 and located at Worcester, Mass. In 1922-23 it had a faculty of 45 members, 876 students, property valued at \$687,400 and an income of \$90,000. Rev. James J. Carlin, S. J., is president.

HOME ECONOMICS, Bureau of. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

HOMES, M. Goode, American educator: b. Boynton, Va.; d. Columbia, S. C., 6 May 1922. He was educated at the University of Virginia and the United States Military Academy at West Point. He was widely known as an engineering authority, and was assistant engineer for the republic of Cuba more than 20 years ago. He was special agent for the United States Bureau of Public Roads from 1911 to 1913, and in the World War was with the engineering corps of the United States army in the Big Bend district of Texas. From 1909 until his death he had been a member of the faculty of the School of Engineering of the University of South Carolina. On 6 May 1922 he was shot and killed by Benjamin Haile, university marshal. The shooting occurred in the university treasurer's office. Haile had first threatened to

shoot President W. S. Currel, and had then fired a shot over the head of Dean Leonard T. Baker. The shooting was the result of the bitter feeling that existed between Professor Homes and Marshal Haile, growing out of their conflicting duties at the university.

HOMES, Co-operative. See CO-OPERATIVE MOVEMENT.

HONDURAS, a Latin-American republic of Central America bounded north and northeast by the Caribbean Sea, east and south by Nicaragua, south by the Pacific Ocean and the republic of El Salvador, and west by the republic of Guatemala. It has an area of 44,275 square miles with a population on 1 January 1921 of 637,114. The inhabitants are mostly of Indian blood but there is a large admixture of Spanish blood. On the northern coast there are large negro settlements. Honduras is the third largest of the countries of Central America. The territory of the republic is mountainous throughout and resembles that of Costa Rica with a diversity of soil, climate and products. Its large and fertile plateaux and valleys produce all the tropical crops and offer excellent pasturage for numerous herds of cattle. The forests contain several varieties of cabinet and other woods, of which mahogany is the most important. Bananas are the principal article of export, while sugar, coffee, cocoanuts, rubber, indigo, cattle, hides, together with the precious metals and other mineral products, are shipped. Honduras is the country of the sarsaparilla, of which considerable quantities are annually exported to the United States. The republic is divided into 17 departments and one territory. The latter (La Mosquitia) is mostly unexplored, being covered with dense, impenetrable forests, and inhabited by native races who speak no Spanish. The capital is Tegucigalpa, with 38,950 inhabitants. Other centres are: Pespire, 7,132; La Esperanza, 11,453; Santa Rosa, 10,574; Choluteca, 8,065; and Nacaome, 8,152. Main ports on the Atlantic, are Puerto Cortez, Omoa, Ulua, La Ceiba, Trujillo, Roatan and Tela; on the Pacific Amapala.

Education.—Primary education is provided for by the municipalities, with the help of funds from the Federal government. By law it is free and compulsory for children between the ages of seven and 15 years, but it is almost impossible to enforce school attendance, especially in the rural districts. In 1922, there were in operation 871 primary schools with 1,124 teachers and 45,311 pupils, out of a school population of 93,314. The expenditure on education was about 400,000 pesos. The secondary schools have a five-year course comprising the study of Spanish, French, English, mathematics, book-keeping, natural sciences, etc. Besides the National Institute and the School of Commerce at the capital there are four other secondary schools in the republic. These institutions had 74 teachers and 217 students in 1922. Normal training is provided in schools for boys and girls at the capital, two others at Santa Rosa and La Esperanza, and in normal departments connected with two of the secondary schools. There are about 470 normal students. Higher education is provided by the central University of Honduras at Tegucigalpa, which has faculties of law, medicine, and an

engineering school. There is also a school of jurisprudence at Comayagua.

Religion.—The Roman Catholic is the prevailing religion but freedom is guaranteed to all denominations by the constitution. No state funds are contributed to any sect.

Defence.—Every citizen belongs to the regular army from his 21st year to his 35th and thereafter in the reserve until he reaches his 40th year. The total force is about 77,600 men, of whom 46,100 are in the regular ranks. There are five military zones in the republic.

Products and Industries.—The agricultural possibilities of the country are extensive. Cacao, cotton, sugar cane, coffee, tobacco and other tropical and subtropical products can be grown in immense quantities and of the finest quality, while the forests supply abundant timber, pitch pine and dyewoods. The chief culture crop is bananas which are grown in largest quantities on or near the Atlantic coast. The exports in 1921 amounted to 10,618,624 bunches. About an equal number of coconuts was exported the same year. Coffee and tobacco culture are on the increase, but the rubber industry has been decreasing of late. Henequen and the castor-oil plant are also being planted and the government is offering subsidies to these infant industries. On the temperate table lands, cereals, fruits and vegetables of the more northern latitudes are grown. Cattle raising and dairy farming are practised extensively and there are now 1,561 cattle ranches in the republic.

Gold, silver, copper, lead, iron, antimony and zinc are among the mineral resources of the country, together with some deposits of brown coal. Nearly 2,000,000 ounces of silver and 9,000 ounces of gold were produced in 1921. Of the manufacturing industries those connected with the making of straw hats and cigars are important and their products figure in the exports. There are also factories engaged in the manufacture of ice, shoes, candles, soap, etc., for domestic consumption. Indian corn takes first place in the diet of the people, in which it figures largely on account of the comparatively small quantity of wheat produced in the country.

Commerce.—In 1921-22, the foreign trade of the republic amounted to \$23,113,178, of which \$14,319,882 represented imports. Banana exports represented \$2,788,177; coconuts, \$260,100; cattle and hides, \$195,250; sugar, \$1,000,000, and coffee, \$30,150. The United States took 94 per cent of the exports and furnished almost all of the imports. The banana trade with the United States is facilitated by special steamers which are built for this trade and deliver their cargoes with despatch on the eastern seaboard of the United States.

Communications.—Transportation is the great desideratum in the republic and in recent years there have been made extensive improvements in the roadways, but much remains to be done. There are about 200 miles of improved highways, over which there is an efficient automobile mail service. There are five short railways in the republic, one of which is owned and operated by the state. The others are owned by the great banana corporations and fruit companies. The total length of railways is 475 miles. There are 877 miles of telephone

lines and 4,663 miles of telegraph lines, 277 telegraph offices and 664 telephone stations.

Finance.—The state has the monopolies of alcoholic spirits, tobacco and explosives and also derives a great part of its revenue from customs. The revenue for the fiscal year 1921-22 amounted to \$5,977,188 and the expenditures to \$5,888,978. Of the revenue, \$3,500,000 was derived from customs and about \$2,000,000 from the various monopolies, the remainder from the cattle tax, stamps, telegraphs, cables, etc. The cost of collection was nearly 10 per cent of this total. The external debt of the republic amounts to \$107,644,450, over 80 per cent being accrued interest on old loans. The internal debt amounts to \$16,500,000. The monetary unit is the silver peso or dollar of 100 centavos. The real of 12½ centavos is also in popular use. The value of the peso is legally fixed at one-half the value of the United States dollar. United States currency is being introduced under the Convention of 1920 and about \$3,000,000 of this currency is now in circulation. The metric system of weights and measures is in legal use, but the old Spanish system is still found in general use.

Government.—The legislative power is vested in a Congress of 42 members chosen for terms of four years by direct popular vote. The executive power is in the hands of a President who is elected by popular vote for a term of four years. He is assisted by a council of five ministers with the usual portfolios. The President in 1922 was Gen. Rafael Lopez Gutierrez, whose term of office runs from 1920 to 1924.

History.—On 1 March work was begun by the municipality of San Pedro Sula at Palmar on a section of the Santa Rosa de Copán road,—part of an indispensable system connecting the towns of the west with the "Atlantic" (strictly, Caribbean) coast. In April, plans were announced for equipment of the first Honduran school of aviation. On 25 July there was published in the *Gaceta* the order governing the Banco de la República, an institution starting with a capital of 2,000,000 silver pesos,—its founders being the Banco de Honduras and the National Government, the latter subscribing 20 per cent of the capital. During October the Third Central American Labor Congress was held at Tegucigalpa, where the delegates (two from each Central American country) framed a constitution, a feature of which was the contemplated founding of a Department of Labor to adjust difficulties between capitalist and workman. In the same month it was made known that the fruit companies operating in the northern part of Honduras would assume the cost of various works of sanitation amounting to \$500,000, approximately, in return for exemption from certain taxes. On 1 November occurred the death of José Antonio López Gutiérrez, who for more than four years represented Honduras in the United States. He was a brother of the Honduran President, and was a diplomat of marked ability who had, in his own country, occupied positions of the first importance in three successive administrations. President Harding, in his telegram of condolence, said: "Mr. López Gutiérrez during his residence here has rendered his

country signal service." See also NICARAGUA, HISTORY, 19 and 20 August; CENTRAL AMERICAN CONFERENCE.

HONGKONG, a British crown colony off the mouth of the Canton and about 89 miles distant from the city of that name, and the great centre of British trade with China and Japan. The island is about 11 miles in length and from two to five miles in breadth with an area of 32 square miles. It is separated from the mainland by the Lyeemoon Pass, about half-a-mile in width. The peninsula of Kowloon facing the island also forms part of the colony since 1861. The area of Old Kowloon is about three square miles. Great Britain also leased in 1898 an agricultural area of 356 square miles along the southern shore of the bay and the island of Lan-Tao. The total area of the colony is therefore 391 square miles. The colony is a military and naval station of the first rank. The administration is through a Governor, assisted by an Executive Council consisting of the Commanding Officer of the Troops, the Colonial Secretary, Attorney-General, Treasurer, Secretary for Chinese Affairs, Director of Public Works and three unofficial members. There is also a Legislative Council, mostly composed of the above officials, together with six unofficial members. The Governor in 1922 was Sir R. E. Stubbs. The population of the Colony was in 1921: Non-Chinese, 12,856; Chinese, 612,310; total, 625,166.

There are about 29,000 pupils in all schools. Education is not compulsory, but schools are held to a certain standard of efficiency and are inspected by the state. There are 13 secondary schools, of which 10 are for Chinese (one for girls) and three for children of British parentage. The examinations for the university serve the purpose of a graduation examination from the secondary schools. Higher education is provided by the University of Hongkong, which has about 245 students, mostly Chinese.

The revenue of the colony for 1921 was \$15,336,350 with expenditures of \$17,349,150. The revenue is derived from the opium monopoly, liquor and tobacco duties, land taxes, licenses, etc. The expenditure is largely for the maintenance of a strong police force. The public debt is \$9,200,000.

Sugar refining, ship building, tin refining, making of cement and tobacco and knit goods are the chief industries of the colony. The fisheries are also important. The trade of the colony in 1921 showed the effect of the general world depression, as well as the disturbed conditions of its principal market in South China. In the quantity of goods imported and exported, the year 1921 compared favorably with 1920, which was the record year in the trade of the colony. The value of the 1921 trade, however, computed on a sterling basis, was only about 64 per cent of the 1920 value, but was about equal to the trade in 1918 and 1919. Imports into Hongkong in 1921 were valued at £81,940,154, while the exports amounted in value to £85,673,234, the total foreign trade of the colony, therefore, being valued at £167,613,388, as compared with a total value of £289,340,518 in 1920. The largest item imported in 1921 was raw sugar, of which 365,919 tons,

valued at £8,771,351, were imported. The second largest item imported in 1921 was white rice, imports of which amounted to 523,295 tons, valued at £6,694,037. In the same year the imports of cotton yarn were 33,378 tons, valued at £5,565,578. Broken rice was imported to the extent of 273,694 tons, valued at £2,506,638. Other important items were: Kerosene, £2,362,143; coal, £2,320,398; heavy cotton fancies, £1,952,830; fish and fishery products, £1,930,135; wheat flour, £1,675,042; silk, £1,522,547; tin slabs and ingots, £1,224,576, and cargo rice, £1,119,896. The three principal items exported from Hongkong in 1921 were refined sugar, white rice and cotton yarn. Exports of refined sugar totaled 236,908 tons, valued at £7,774,824; white rice exports amounted to 398,529 tons, valued at £5,278,244, and cotton yarn exports were valued at £5,257,802. Other important exports were: Heavy cotton fancies, £2,936,784; raw sugar, £2,774,115; kerosene, £2,390,041; broken rice, £2,202,620; fish and fishery products, £2,050,162; tobacco, £2,028,065, and silk, £1,537,596. The bulk of the foreign trade of the colony is with the United States, the United Kingdom and Japan. In 1921 the United States lead in furnishing miscellaneous food stuffs, iron and steel angles and tees, joists and rivets, machine belting and clocks and watches; the United Kingdom led in aniline dyes, jams, confectioneries, copper wire, cutlery, tin and zinc plates and sheets, railway materials, electrical accessories, soap, hosiery and automatic musical instruments. Japan led with canned meat and fish, printing and lithographic material and toys and games, unbleached cottons and sewing cotton. Declared exports to the United States in 1921 totaled \$8,805,352, as compared with \$5,203,980 in 1913 and with \$69,922,951 in 1920. The total tonnage at the port of Hongkong in 1921 was the largest in the history of the colony. The total, including vessels in local as well as foreign trade, was 672,681 vessels of 43,420,970 tons. There were no developments in railway transportation in the colony during the year. Local road improvement continued. The most important project of its kind in progress—the motor road to the peak—was completed to the top of the hills and across the crest, thus making it possible to use trucks to this district, heretofore, accessible only by cable tramway and sedan chairs.

HONGKONG UNIVERSITY SCHOOL OF MEDICINE AND SURGERY. See ROCKEFELLER FOUNDATION.

HOOD COLLEGE, a non-sectarian educational institution for women, founded in 1893 and located at Frederick, Md. In 1922-23 it had a faculty of 33 members, 400 students and property valued at \$1,500,000. Income figures not available. Joseph H. Apple, LL.D., is president.

HOOKWORM. See MEDICINE AND SURGERY, ADVANCEMENT OF; ROCKEFELLER FOUNDATION; VETERINARY MEDICINE AND SURGERY.

HOOPER, Horace Everett, American publisher: b Worcester, Mass. 3 Dec. 1859; d. Bedford Hills, N. Y., 13 June 1922. He first attended the Worcester public schools and there-

after Princeton preparatory school. In 1893 he organized the Western Book and Stationery Company and opened a place of business in Denver, Colo. A few years afterward he organized a company for the sale of the 'Century Dictionary' and other reference works. After having had many years of experience in the book business, especially in connection with the sale of reference books in this country, Mr. Hooper decided to go to England and unite with a book-selling company in that country. Prior to 1900 he and Walter M. Jackson, with whom he had formed a partnership, were associated with James and George Clarke in the sale of subscription books under the firm name of Clarke Company, Ltd. In March 1900 Hooper and Jackson bought out the Clarkes. Plans were then developed for an expansion of their business. One of their first acts was to acquire the copyrights and the trade name of the 'Encyclopaedia Britannica' with a view of selling that reference work in all parts of the world. In 1902 it was deemed advisable by them to organize separate English and American companies. In England, the business was carried on under the name of Hooper & Jackson, Ltd.; in the United States under the name of the Encyclopaedia Britannica Company, a New York corporation. The 10th edition of the 'Encyclopaedia Britannica' was published under the auspices of *The London Times*, and for many years the business relations between *The Times* and Mr. Hooper had been intimate. In January 1908 an announcement of a contemplated change in the control of *The London Times* was regarded by Mr. Hooper and his partner as likely to impair the value of the contract they had for the publication of the 11th edition of the 'Britannica.' They had invested a large amount of money, and to assure protection of their interest, Mr. Hooper proposed that he and his partner purchase the controlling interest in *The Times* and combine it in an immense publishing business with the 'Encyclopaedia Britannica' and other noted English publications. Mr. Jackson objected to Mr. Hooper's plans on the ground that it was a hazardous business venture, likely to result in a large loss. Mr. Hooper's alternative proposal was that he and his partner raise \$1,500,000 on their joint assets for bringing out the 11th edition of the 'Britannica,' a plan to which Mr. Jackson likewise objected. As a result, however, of the negotiations of Hooper and Jackson, *The London Times* in March 1908 passed to the control of a limited liability company with Arthur Walter, G. E. Buckle and the late Moberly Bell as chief managers and directors. At that time it was reported that Sir Arthur Pearson also was desirous of purchasing *The Times*, which, however, because of internal differences among the members of the management, passed to the control of the late Lord Northcliffe on 27 June 1908. The differences referred to, together with others relative to the management of their business resulted in long litigation between Mr. Hooper and Mr. Jackson, which was eventually decided in Mr. Hooper's favor. The full story of the alliance between *The London Times* and the 'Encyclopaedia Britannica' and the plans of Mr. Hooper to purchase *The Times* was brought out in papers filed in the New Jersey Court of Chan-

cery in 1909 in a suit asking for the appointment of a receiver of the joint assets of the two partners. For the last 14 years of his life Mr. Hooper had made his home in this country, and as president of the Encyclopaedia Britannica, Inc., directed his affairs from an office in New York City.

HOPE COLLEGE, a co-educational institution founded in 1854, incorporated 1866 and located at Holland, Mich. It belongs to the Reformed Church but is nevertheless non-sectarian. In 1922-23 it had a faculty of 21 members, 568 students, property valued at \$2,250,000 and an income of \$85,000. Edward D. Dimment, L.H.D., is president.

HOPS. Practically all of the commercial hops grown in the United States are produced in the States of Washington, Oregon and California. At least, these are the only States taken into consideration by the Department of Agriculture in making up its estimates of production. The hop yield for 1922 was 25,910,000 pounds, compared with 29,340,000 pounds in 1921 and 34,280,000 pounds in 1920. The 1922 crop was valued at \$2,200,000, compared with \$7,080,000 in 1921 and \$12,236,000 in 1920. California, which has led in the production of hops for the last three years, produced 14,760,000 pounds in 1922, 15,000,000 pounds in 1921 and 18,900,000 pounds in 1920. Oregon produced 9,600,000 pounds in 1922, 9,240,000 pounds in 1921 and 8,700,000 pounds in 1920. Washington dropped to 1,550,000 pounds in 1922 from 5,100,000 pounds in 1921 and 5,730,000 pounds in 1920. New York, which produced 950,000 pounds in 1920, dropped out of the production list entirely in 1921 and 1922, as shown by the Department of Agriculture's report.

The consumption and movement of hops in 1922 was given by the Department of Agriculture as follows: Consumed by brewers, 4,452,676 pounds; exported, 19,521,877 pounds of domestic, 487,633 pounds of foreign, making a total of brewers' consumption and export of 24,462,186 pounds. In 1914 brewers consumed 43,987,623 pounds, while exports for the year amounted to 24,262,896 pounds. Imports for 1922 amounted to 893,324 pounds as compared with 11,651,332 pounds imported in 1915.

HORSE RACING. See SPORTS.

HORSES. See AGRICULTURE IN THE UNITED STATES.

HORTICULTURE. General Crop Conditions.—The year 1922 was characterized by uniformly good growing conditions, increased yields in most commodities, corresponding lower prices and an acute car shortage at the time of shipment of perishable fruits. Scab was prevalent in New York and Michigan, codling moth injury was quite severe in the Pacific Northwest, scale was reported on the increase in the Middle West and a spring freeze caused damage in California, but aside from these minor local problems there were no such general disturbances as the severe spring frosts and freezes of 1921.

The carlot shipments of pears, peaches and grapes were record-breaking. Nineteen thousand cars of pears were shipped, compared with 13,000 last season and a previous high record the season before of 15,000. Peach shipments

were 36,000 cars, or 9,000 more than last year and 10,000 above the average for the five-year period, 1917-21. Shipments of grapes were 13,000 cars more than were moved any previous year—52,000 cars in all, of which California, despite the car shortage, supplied 37,000 or 4,000 more than in 1921. New York, Michigan and Pennsylvania doubled their average shipments, yet grape prices held up fairly well until near the end of the season. Early apples being plentiful, brought low prices, but the fall and winter apple market steadied, though it did not reach the level of 1921. Early peaches, on the other hand, commanded good prices, due to the short crop in Georgia, but the heavy mid and late-season supply from New York and Michigan resulted in severe declines and considerable loss later in the season.

Most horticultural crops showed increases for 1922. Estimates of the United States Department of Agriculture for the year give the following comparisons: White potatoes, 451,185,000 bushels with a value of \$262,608,000 in 1922, and 361,659,000 bushels valued at \$398,362,000 in 1921; sweet potatoes, 109,534,000 bushels in 1922 and 98,654,000 in 1921; cabbage, 1,097,600 tons valued at \$14,301,000, compared with 673,900 tons valued at \$16,612,000 the previous year; commercial apples, 31,090,000 barrels with a value of \$91,534,000, compared with 21,557,000 barrels in 1921 with a value of \$99,131,000, and oranges, 24,900,000 boxes in 1922 and 20,300,000 boxes in 1921. The commercial production of vegetable seeds increased; commercial lettuce registered 27,612 cars or 25 per cent more than in 1921; and certified seed potatoes increased from 1,505,970 bushels to 2,255,360 bushels. Carlot shipments of strawberries showed a 75 per cent increase from 10,681 cars in 1921 to 18,500 cars in 1922, exceeding the seven-year average by 6,000 cars and marking a return from the growing of the more essential crops characteristic of the years of the war. Canning crop acreages approached more nearly the normal maintained before curtailment of plantings immediately following the war. The total acreage increased 27 per cent, while the tomato acreage more than doubled, jumping from 88,000 to 217,000 acres.

Foreign Commerce.—Exports of horticultural products from 1 January to 1 November showed a slight loss in value from those for the same period in 1921; imports gained. The total value of exports of fruits, nuts and vegetables for this period of 1921 was \$72,198,529, as compared with a value for 1922 of \$69,105,363. Fruits were valued at \$53,315,161 in 1921 and \$52,638,163 in 1922; vegetables at \$17,434,840 in 1921 and \$15,333,404 in 1922; and nuts at \$1,448,528 in 1921 and \$1,133,796 in 1922. Some of the conspicuous differences were: Oranges, which dropped from \$7,063,422 in 1921 to \$5,561,064 in 1922; raisins, which more than doubled, increasing from \$3,105,954 in 1921 to \$7,005,264 in 1922; and canned fruits, which increased from \$11,280,045 in 1921 to \$17,272,231 in 1922. A large share of these gains was due to increased exportations to the United Kingdom, the value of raisins for example, increasing from \$836,436 in 1921 to \$3,683,971 in 1922, and canned fruits, from \$8,060,722 in 1921 to \$14,391,322 in 1922. Exports of vege-

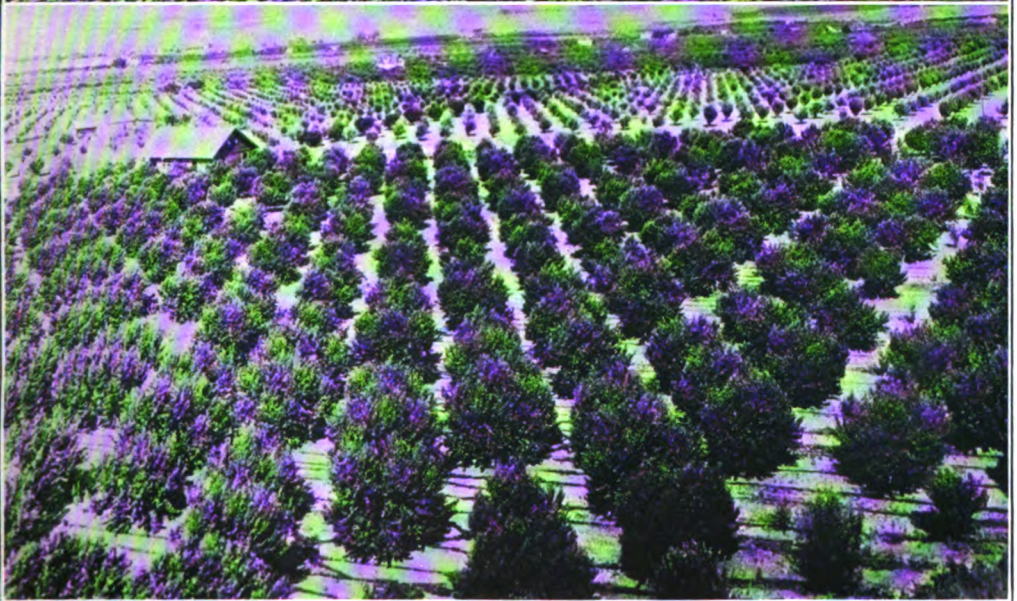
table and flower seeds were given a total valuation of \$808,718 and nursery and greenhouse stock of \$268,554.

Imports into the United States from 1 January to 22 September, the date of the enforcement of the Tariff Act of 1922, more commonly known as the Fordney-McCumber Tariff Bill, were as follows: Fruits \$30,541,473, vegetables \$14,837,728, nuts \$24,947,027, with a total value of \$70,326,228. The value of similar products imported in the first nine months of 1921 was \$58,408,172. Nursery stock increased slightly from \$4,102,442 for a like period in 1921 to \$4,717,281 in 1922. Nut and tropical imports gained decidedly in value, as evidenced by increases in lemons from \$1,044,872 to \$1,990,199, olives from \$1,939,150 to \$3,053,481, shelled almonds from \$2,953,161 to \$4,634,702 and shelled walnuts from \$3,119,520 to \$5,350,399.

One of the outstanding features of the season was the interest shown in the fruit industry in the South Temperate Zone. New Zealand, South Africa, Australia and Chile became increasingly active exporters of fresh fruits. Chile, especially, has commanded attention because of a climate and geography similar to that of California which permits her to produce a wide range of fruits and at a season which places them upon the markets of the United States during the months of January, February, March and April. Imports of fresh fruits from Chile for the first six months of 1922 were 35,594 cases with a total value of \$63,642, compared with 1,562 cases valuing \$4,404 for the entire 12 months of 1921. Cherries from South Africa were placed on sale in England a week or two before Christmas.

Commercial Progress.—The coal and railroad strikes were felt keenly in handling of perishable products. Eastern growers were not so seriously handicapped in this respect as the more distant shippers from California and other Pacific Coast States. In Colorado 500 carloads of peaches rotted for lack of cars, in California grapes were shipped bulk in box cars and in Oregon only 15 per cent of the necessary box cars and 40 per cent of the refrigerator cars were available. Because of this shortage, more than 150,000 boxes of apples were shipped, mostly from Oregon, by boat, and prices of boxed apples were maintained relatively high though orchards and shipping points were burdened with fruit. There was, nevertheless, a renewal of the tendency to ship long distances and under refrigeration. Strawberries and red raspberries grown in the Puget Sound region of the Northwest were shipped in special express refrigerator trains and served in Chicago 80 hours after picking. The trend towards better packing and marketing methods and the success of co-operative marketing was also evidenced. Arkansas shipped peaches packed in California-style boxes to Chicago, where they were well received. The branding of individual fruits with a trade-mark or brand, as was done with the Blue Goose brand of grapefruit, was received enthusiastically by the trade. The Satsuma growers of western Florida organized a co-operative association; peach-growers of the Yakima Valley in Washington did likewise; and the apple and peach-growers of southern Cali-

HORTICULTURE



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1. Picking strawberries in Nova Scotia
2. Lettuce farm in New Jersey
3. Apple orchard, Wenatchee Valley, Washington

fornia, not to be outdone by the citrus, raisin and nut-growers, organized the Deciduous Fruit Distributors of Southern California. In the East the several local packing associations of the Hudson Valley formed the Hudson Valley Fruit Growers' Co-operative Association, Inc., patterned after the successful western New York association formed but a few years ago.

The most important single event, however, was the formation of a national co-operative sales agency, the Federated Fruit and Vegetable Growers, Inc., as the result of the work of the National Fruit Committee of Twenty-one appointed by the American Farm Bureau Federation. The new organization is organized on a non-stock, non-profit plan, and is intended to be grower-owned and controlled, with a national scope. By absorbing the North American Fruit Exchange, which has been marketing for co-operative organizations since 1911, the lapse of time necessary to build up a working organization has been materially lessened and the new organization began operation 1 Jan. 1923. Only co-operative organizations and large growers prevented from joining a co-operative organization by geographical circumstances will be permitted to become members of the concern. Further progressive efforts to improve the marketing situation were shown by the increase in joint State-Federal shipping point inspection service and by the growth of market inspections by the Food Products Inspection Service of the United States Department of Agriculture, which made 31,207 inspections during the fiscal year ending 30 June 1922, as compared with slightly less than 24,000 in 1920-21. In New York and Michigan the bushel-basket and hamper were largely retained as fruit packages following their adoption in 1920 upon the exorbitant charges made for barrels. The canning associations in these and other eastern States began activities towards the production of yellow-flesh, clingstone peaches suitable for canning, with the idea of competing with California for the canned peach market.

Regulatory and Control Work.—In May 1922 the Secretary of Agriculture called a conference to discuss from all angles Quarantine 37, an act which regulates the importation of horticultural plants and seeds for propagation purposes and which has been most vigorously attacked by interests both in this country and abroad ever since its adoption. Evidence of the need of the quarantine was shown by the report that during the last fiscal year 500 different species of insect pests were intercepted at points of entry into the United States. The conference succeeded in clearing up many disputed points and in securing the endorsement of many formerly hostile interests. The Federal Horticultural Board reported that the Japanese beetle was present in alarming numbers in the region of its original infestation and that it was spreading about five miles a year from the quarantined area. The Parlatoria date scale was noted as still infesting some 14 of the 200 date plantations in the United States, and the intensive measures for its eradication were therefore continued, for it is conceded that the new date industry cannot succeed unless the scale is eradicated. Activities to keep in check the brown-tail and gypsy moths met with some success in

the case of the former and resulted in a marked reduction in the area quarantined. The gypsy moth, however, made its appearance in two places on Long Island but was promptly met by vigorous measures on the part of both State and Federal authorities.

New Fruits.—New fruits are a constant source of interest and were no less so during 1922. The esteem in which a relatively new fruit, the Delicious apple, is held by some was evidenced by the dedication of a monument at Winterset, Iowa, on 16 Aug. 1922, commemorating the origin of the tree. A new old apple, Rainier, introduced by the Washington Nursery Company of Toppenish, Wash., was awarded a Wilder silver medal of merit by the fruit committee of the American Pomological Society. The Cortland apple, introduced by the New York Agricultural Experiment Station at Geneva, N. Y., rose to increased prominence. A new strawberry of the ever-bearing type, "Rock-hill," was reported purchased by a Michigan nursery company for a fabulous sum, and a new canning pear, resistant to pear-blight, was introduced by the Plant Introduction Board. Two other interesting novelties were the "peach-mond," reported from Mexico as a hybrid between the peach and almond; and the Andes berry, introduced into America as a vigorous growing plant resembling the raspberry in plant and the blackberry in fruit.

Research.—Scientific effort in horticulture has more recently followed in the channels of fundamentals. The New Hampshire station reported that shaded horticultural plants were higher in moisture and total nitrogen content than unshaded, with free reducing sugars and starches lower. In a similar vein, it was found at the Wisconsin station that the length of day affected the fruiting of plants by virtue of an affect upon the carbohydrate-nitrogen ratio. Several stations reported upon bud selection work. The New York (Geneva) station stated that young trees budded from both high and low yielding parents showed no corresponding differences in yield; the East Malling research station, England, reported a similar conclusion from similar investigations; and the Maine station stated that differences in yield in apples were due to external conditions, even continuing so far as to suggest that closer biometric studies of bud variations in citrus might reveal less variation than has previously been held. Orchard fertilization studies with the apple at the Pennsylvania State College when subjected to biometric study indicated that in a clean cultivated orchard of normal fertility in which a cover crop system of orchard management is employed, the addition of fertilizers is rarely profitable. Reports from several stations on spraying and dusting indicated the increasing use of forms of nicotine for insect control and of finely divided sulphur for the control of fungi. There was a noticeable disposition to reserve judgment on the benefits of calcium caseinate and other spreaders. Confidence in the study of the Massachusetts station on leaf characters of apple varieties was expressed by the Massachusetts Fruit Growers' Association, which adopted a nursery certification plan based on this work. Better accommodations were provided for the study of horticulture. In New York a field sta-

tion for the study of vegetable problems was established on Long Island; in Florida a citrus sub-station was located at Lake Alfred, and in Louisiana a substation was established especially for vegetable work. At Cornell University a new pomology storehouse and cold-storage plant were erected and at the University of Illinois the new horticultural building was completed. The latter, erected at a cost of over a quarter of a million dollars and complete in every detail including cold-storage plant, canning factory, cider and vinegar plant, by-product and preserving laboratories, and spraying and machinery laboratories, represents an entirely new plan in building design and illustrates perhaps the most important need in the handling of horticultural products, namely, refrigeration. In the centre of the building is the cold-storage; this is surrounded by a corridor, from which open the class-rooms and laboratories.

Necrology.—The year of 1922 took more than its share of men prominent in horticulture, notably, S. A. Beach, chief of the department of horticulture at the Iowa Agricultural College since 1905, occupant of a similar position at the New York Agricultural Experiment Station at Geneva from 1891 to 1905, author of 'The Apples of New York,' and one of the most successful American fruit breeders, died 2 November; G. Harold Powell, general manager of the California Fruit Growers' Exchange since 1912, author of numerous publications upon storage and handling of perishable products, and widely known as an authority on co-operative marketing, died 18 February; Dr. John P. Stewart, professor of experimental pomology at the Pennsylvania State College from 1907 to 1918 and noted for his work in fertilization of apple orchards and the preparation and use of lime-sulphur, died 21 January; Dr. William W. Tracy, recently retired vegetable specialist in the United States Department of Agriculture and author of many articles dealing with varietal nomenclature, vegetable seed growing, and allied topics, died 1 March; Dr. Walter Van Fleet, horticulturist and physiologist of the Bureau of Plant Industry since 1910, working primarily as a plant breeder with gladioli, chestnuts, and roses, and noted as the originator of the Van Fleet climbing rose, died 26 January; Dr. J. C. Whitten, head of the division of pomology in the University of California since 1919 and holder of a similar position in the University of Missouri from 1895 to 1918 and most intimately identified with the successful work of both institutions, died 5 June.

Publications.—A few of the horticultural publications of the year of especial merit are: V. R. Gardner, F. C. Bradford and H. D. Hooker, Jr., 'The Fundamentals of Fruit Production' (New York and London 1922); L. H. Bailey, 'The Apple Tree'; U. P. Hedrick, 'Cyclopedia of Hardy Fruits'; J. H. Gourley, 'Text-Book of Pomology'; Fritz Bahr, 'Commercial Floriculture'; W. V. Cruess and A. W. Christie, 'Laboratory Manual of Fruit and Vegetable Products' (New York 1922); A. D. Taylor, 'The Complete Garden' (New York and Toronto 1921); F. A. Waugh, 'Landscape Gardening' (New York and London 1922); E. Brainard, 'Violets of North America' (Vermont Station Bulletin 224, 1921); U. P.

Hedrick, G. H. Howe, O. M. Taylor, E. H. Francis, and H. B. Tukey, 'The Pears of New York' (New York Station Report, Part II, 1921); J. K. Shaw, 'Leaf Characters of Apple Varieties' (Massachusetts Station Bulletin 208, 1922).

HAROLD B. TUKEY,
Assistant Horticulturist, New York Agricultural Experiment Station, Geneva, N. Y.

HOTCHKISS, Henry DeWitt, American jurist: b. Albany, N. Y., 2 July 1856; d. New York, N. Y., 6 March 1922. He received his education in the schools of his native city, being graduated from the law school there in 1878. He secured admission to the bar the same year and entered the law office of the late David B. Hill. He removed to Brooklyn in 1887, was elected to the State Assembly from that city for one term, and thereafter for several years was engaged as organizer and director of the Brooklyn Heights Street Railway Company. In the latter capacity he attracted the attention of Richard Croker, then leader of Tammany Hall, by whom he was induced to join the organization. During the remaining years of Mr. Croker's leadership, Mr. Hotchkiss was his personal legal adviser and subsequently served in a similar capacity to Charles F. Murphy. In 1911 he was elected a justice of the Supreme Court; took his seat the following year and after a year in trial and special term was named to the Appellate Division of the Supreme Court to fill the vacancy caused by the elevation of Justice Nathan L. Miller (later governor) to the Court of Appeals. Owing to ill health and at his own request he was sent to trial term in 1915. His legal learning and the thorough reasoning of his decisions earned for him the entire respect of the members of his profession. His work on the bench during the last two years of his life was interrupted several times by illness. Justice Hotchkiss was a member of the Metropolitan and Manhattan clubs.

HOUSING. See BUILDING; also BUILDING AND HOUSING DIVISION OF THE DEPARTMENT OF COMMERCE.

HOWARD COLLEGE, a Baptist co-educational institution founded in 1842 and located at Birmingham, Ala. In 1922-23 it had a faculty of 22 members and a student enrollment of 490; during the summer session of 1922 the faculty numbered 30 members and student body 830. The institution's property is valued at \$797,931.72 and its income was fixed at \$78,000. President, John C. Dawson, LL.D.

HOWARD PAYNE COLLEGE, a Baptist co-educational institution, opened in 1890 and located at Brownwood, Texas. In 1922-23 it had a faculty of 26 members, 893 students, property valued at \$575,000 and an income of \$119,906.89. W. R. Hornburg is president.

HOWARD UNIVERSITY, a non-sectarian co-educational institution, for colored students founded in 1867 and located at Washington, D. C. In 1922-23 it had a faculty of 151 members and 2,079 students. The value of the institution's property and its income for 1922-23 were not given but in 1921-22 its property was valued at \$2,069,389.26 and its income at \$589,036.90. J. Stanley Durkee, A.M., Ph.D., D.D., is president.

HOWE, Henry Marion, American metallurgist: b. Boston, Mass., 2 March 1848; d. Bedford Hills, N. Y., 14 May 1922. He was the only son of the late Julia Ward Howe and Dr. Samuel Gridley Howe. He was graduated from Harvard University in 1869 and from the Massachusetts Institute of Technology in 1871, receiving the degree of LL.D. from Harvard and Lafayette College in 1905, and the degree Sc.D. from the University of Pittsburgh in 1915. His work in metallurgy and his many books on the subject won honors in several countries, including the Bessemer medal of the British Iron and Steel Institute, 1895; the Elliott Cresson gold medal of the Franklin Institute, of Philadelphia, 1895, the gold medal from the Société d'Encouragement pour l'Industrie Nationale, 1916, and the John Fritz gold medal, 1917. He was president of the jury of mines and mining at the Chicago Exposition in 1893, and in the same year was president of the American Institute of Mining Engineers. He was honorary chairman of the engineering division of the National Research Council, and also consulting metallurgist of the United States Bureau of Standards. From 1897 he was professor of metallurgy at Columbia University, New York City, and at the time of his death was professor emeritus. He had been president of many scientific associations and was a member of nearly every important society in his profession, not only in the United States but in many other countries. He published 'Copper Smelting' (1885); 'Metallurgy of Steel' (1891); 'Metallurgical Laboratory Notes' (1902); 'Iron, Steel and Other Alloys' (1903); 'Metallography of Steel and Cast Iron' (1916).

HUDSON, W. H., English author and naturalist: d. London, 18 Aug. 1922. Regarded at the time of his death as one of the foremost of the modern writers on nature and famed for his literary style, it was only in recent years that Mr. Hudson came to be appreciated. In 1901 a Civil List pension of £150 was awarded to him in "recognition of the originality of his writings on natural history." This he returned shortly before his death because he was no longer in need of it, "the recognition," he said, "in which he stood so much in need in his earlier days was now more than abundant" and that all his relations were dead. The early part of his life was spent on an *estancia* on the Argentine pampas, where he acquired the knowledge and love of nature described in his 'Naturalist in La Plata' (1892). His first book, 'The Purple Land which England Lost,' published in London in 1885, alludes to the blood-stained history of the Banda Oriental (the Republic of Uruguay) and to its brief conquest by the English. In 1887 'A Crystal Age' appeared, giving a picture of Utopia; in 1888-89 the 'Argentine Ornithology' written by Dr. P. L. Selater and Hudson which attracted much attention; and in 1893 'Idle Days in Patagonia.' By this time Mr. Hudson had settled in London and had begun to study rural England and its people, its bird-life, its trees and flowers. As his observation grew more intimate, his imagination was captivated by a second field—the English countryside; and his later books are full of a peculiar charm combined with a

spiritual insight. It has been aptly said that Hudson's "peculiar genius lay in setting forth nature and its minutest creatures with gentleness and understanding, not 'scientifically' and coldly, but humanly. He turned a loving yet illuminating searchlight upon the experiences of birds, squirrels, hornets, field-mice, dragon-flies, upon countless other atoms which men have been too prone to ignore, or else to examine patronizingly from their toppling heights of imaginary superiority." His books include, besides those already mentioned, 'Birds in a Village' (1893); 'British Birds' (1895); 'Birds in London' (1899); 'Nature in Downland' (1900); 'Birds and Man' (1901); 'E. Ombu' (1902); 'Hampshire Days' (1903); 'Green Mansions' (1904); 'The Lands' End' (1908); 'Afoot in England' (1909); 'A Shepherd's Life' (1910); 'Adventures among Birds' (1913); 'Far Away and Long Ago: A History of My Early Life' (1918); 'Birds in Town and Village' (1919); and 'The Book of the Naturalist' (1919); 'A Traveller in Little Things. (1921) and 'A Hind in Richmond Park' (1922). Theodore Roosevelt wrote the preface for an edition of 'The Purple Land'; John Galsworthy the preface for 'Green Mansions'; and Edward Garnett a foreword for 'A Hind in Richmond Park.'

HUNGARY, a country of eastern-central Europe, formerly a kingdom and united with Austria to form the dual monarchy or empire of Austria-Hungary. Officially Hungary is a monarchy and the ministry is styled the Royal Hungarian Ministry. The state is governed by a regent, who in 1922 was Admiral Nicholas von Horthy.

Area and Population.—Under the terms of the Treaty of Trianon, ratified by Hungary 13 Nov. 1920, Hungary ceded Slovakia to the new republic of Czechoslovakia, Croatia and Slavonia to Yugoslavia and Transylvania to Rumania. Later the Burgenland was ceded to Austria. The area of the old kingdom of Hungary was 125,600 square miles with a population of 20,886,487. In 1922 its area was 35,654 square miles and its population 7,840,832. Budapest, the capital, has a population of 1,184,616. Other large cities are: Szeged, 109,896; Debreczen, 103,228; Kecskemet, 72,768; and Hodmezovasarhely, 60,854.

Religion.—There is full toleration for all denominations under the constitution and full equality is accorded to all legally recognized faiths, each of which has the independent management of its own affairs. The chief religions are the Roman and Greek Catholic, the Evangelical, Jewish and Mohammedan. There are some Baptists, Unitarians and Oriental sects.

Education.—Primary education is free and compulsory for all children from six to 12 years of age. In Old Hungary there were over 15,000 primary schools with 1,750,000 pupils, but no statistics are available for the present restricted area. There are four universities all maintained by the state—Budapest, Colosvar, Pozsony and Debreczen. There are numerous theological seminaries, the majority of which are Roman Catholic.

Production.—Agriculture is the chief industry of Hungary. The soil is very fertile and

the crops are bountiful. In 1920, 267,440 acres were planted to wheat and yielded 7,930,270 quintals; 1,482,137 acres were planted under rye and yielded 4,196,430 quintals; 1,272,157 acres were planted to barley and yielded 4,364,350 quintals; 806,091 acres were planted under oats and yielded 3,355,960 quintals; 2,026,502 acres were planted to Indian corn and the yield was 12,273,770 quintals; 533,191 acres were devoted to viniculture, the great yield from which was 1,978,468 quintals; 77,824 acres were planted to sugar beets and yielded, 6,378,752 quintals. In the same year there were in the state 2,221,988 head of cattle, 1,817,405 sheep, 3,729,190 swine, and 746,423 horses. About 1,357,438 acres are under forest. The yields of the chief crops in 1921 and 1922 were as follows:

	1922 tons	1921 tons
Wheat.....	1,226,000	1,434,000
Rye.....	544,000	583,000
Barley.....	454,000	466,000
Oats.....	323,000	318,000
Maize.....	825,000	805,000
Potatoes.....	921,000	1,249,000
Sugar beet.....	573,000	542,000

The coal production of Hungary in 1920 was 4,458,694 tons. There are large deposits of brown and lignite coal. The other mining industries have been largely destroyed, the more profitable areas being now in the border states. The fisheries of the Danube and on the Balatonsee are still important and the wine industry is improving. The manufacturing industries of the country are mostly those based on agriculture. They include distilling, sugar refining, hemp and flax manufacture, etc.

Commerce.—Imports into Hungary in 1920 amounted to only 5,423 quintals and exports to 5,226 quintals. In 1922 imports were valued at 63,700,000,000 crowns and exports at 53,400,000,000 crowns.

Communications.—Hungary has 4,372 miles of railways. Good roads are numerous. Of the railways 1,858 miles are the property of the state. There are 2,156 post offices.

Finance.—The state budget for the year 1922 contemplated a revenue of 20,294,193,738 kronen and an expenditure of 26,762,508,209 kronen. The public debt of Hungary at the beginning of the year was placed at 54,453,041,000 kronen, of which 8,287,835,000 kronen are pre-war debt, 32,631,056,000 kronen debt incurred during the course of the war, and 13,534,150,000 kronen incurred since the war.

Army.—Under the terms of the Treaty of Trianon conscription was abolished and voluntary enlistment substituted. According to the treaty the army is limited to 35,000 officers and men. All recruits must undertake to serve at least 12 years consecutively, of which six years are with the colors. Officers undertake to serve at least for 20 consecutive years. Hungary has a gendarmerie numbering 12,000 and an equal number of police and 4,500 customs guards. There is no naval or air force.

Government, etc.—The executive power is vested in the Regent. The legislative power in a Parliament elected by universal suffrage. On New Year's day the Interallied Commission in charge of the plebiscite at Oedenburg, the chief city

of the Burgenland, handed the city over to the Hungarian authorities, the plebiscite having been in favor of Hungary. Count Laszlo Szechenyi, husband of the former Gladys Vanderbilt of New York, was appointed minister to the United States following the exchange of the ratifications of the treaty of peace between the two governments. The government released the Legitimist leaders from prison and the occasion was seized on by the Carlists for a great demonstration. When some of these leaders appeared in the Parliament they were cheered and a dinner was given in their honor. On 20 January a violent scene took place in the Diet when one of the Carlist leaders just out of prison attacked the Regent. He was howled down by the partisans of the latter but there was a general affray which reflected little honor on the participants. On 15 February an attempt was made on the life of the Regent, Admiral Horthy. The latter escaped uninjured. In the same month it appeared that a strong military clique was preparing a coup to place on the throne the Archduke Albrecht, who is a scion of the House of Hapsburg. A French syndicate concluded a contract with the Hungarian government for the construction of an international free port at Budapest. It provides for the formation of a joint stock company with a capital of 100,000,000 crowns, of which the syndicate contributes 40 per cent and the state 60 per cent. The company is to receive a concession for working the free port for a period of 50 years. It is understood that the syndicate is largely controlled by the Schneider-Creusot interests. The contract is approved both by the Reparation Commission and the French government. The ex-King Charles died at Funchal, Madeira, on 1 April 1922. The news of his death created a profound sensation in Budapest, where a campaign to raise funds for the royal family resulted in the collection of several million crowns. The city was plunged into mourning. The Legitimist leaders proclaimed the succession of Prince Otto to the Hungarian throne. The prince is the eldest son of the late King Charles. The prince-primate, Cardinal Cernoch endorsed the proclamation but the government confined its activities to taking precautions against a Legitimist coup. On 3 April a bomb was thrown into a hall during a dinner of the Democratic Club, killing four and wounding 30 persons. The outrage was an attempt to assassinate White Deputy Rassay, one of the anti-White Terrorist leaders in the Diet. He was to speak at the dinner, but arriving late he escaped injury.

The Bethlen government caused great indignation by its electoral edict, abolishing universal suffrage and reducing the electorate by one-fourth and substituting open polling for the secret ballot. It was thought to be a device to prevent the sweeping away at the polls of the Horthy regime. After the death of the ex-Emperor Charles it was rumored that his brother, the Archduke Maximilian was in possession of a will signed by him and appointing Maximilian guardian of the Archduke Otto, regarded by the Legitimists as King of Hungary. Under the law, however, this guardianship devolves upon the ex-Empress Zita, who also was named to that office in the Legitimist proclamation is-

sued soon after the death of Charles. The ex-Empress accepted the invitation of King Alphonso of Spain to live in Madrid with her children. At the Genoa Conference the Hungarian Premier tried to have the succession states contribute to the expenses of her household. His proposal was opposed by Benes of Czechoslovakia who declared that such a step could be undertaken only under certain guarantees. The Hungarian government addressed a memorandum to the Reparations Commission, stating that the damages incident to the Rumanian occupation in 1919 amounted to the sum of 2,500,000,000 gold francs.

A general election to the Hungarian National Assembly took place 28 May-1 June and resulted in large majorities for the Horthy regime. The supporters of the Horthy-Bethlen party are almost exclusively of the countryside constituencies. A noteworthy feature of the elections was the defeat of eight of the members of the Cabinet. The Legitimists secured a number of seats and about a score of the Socialists were elected for the first time in the history of the country.

The ex-Empress Zita left Madeira Island on 19 May for Spain where she was cordially welcomed by King Alphonso. A daughter was born to her at the El Pardo Palace, Madrid, on 31 May. The Spanish sovereigns acted as its sponsors and the papal nuncio officiated at the baptismal ceremonies. The ex-Empress notified Admiral Horthy that she still regards herself as Queen of Hungary and that she will devote her life to the securing of the throne for her son, Prince Otto. Vigorous measures were taken by the government for the suppression of radicals. In the general elections on 28 May and 1 June the Free Monarchist group was successful over the Legitimists. The Boundaries Commission's rulings caused great dissatisfaction with its decisions delimiting the frontiers between Hungary and Rumania and between Hungary and Yugoslavia. Further dissatisfaction was caused by the deportation of 250 Hungarian families from Yugoslavia on 9 July. The Hungarian government protested to Belgrade and appealed to the League of Nations to put a stop to the deportations. The government was engaged throughout the summer months in stopping the activities of the ardent patriots, notably Ivan Hejjas, who organized the invasion of the Burgenland, instituted pogroms against the Jews and in general contributed to what came to be called White Terrorism. On 18 September Hungary was admitted to membership in the League of Nations and there was great rejoicing throughout the country. Later in the month the government sent to the Allied representatives at Budapest a note of protest against the maintenance of the Interallied Commission of Military Control at Hungary's expense, although Hungary had faithfully executed all the military clauses of the Treaty of Trianon. The drop in the Hungarian krone caused anxiety in financial circles. In October a registration of all foreigners resident in Hungary was ordered with the avowed object of weeding out undesirables. On 3 October leaders of the Royalists formally announced Prince Otto, eldest son of the late King Charles, as King of Hungary in succe-

sion to his father. The leaders appeared before the Premier, Count Bethlen, and requested that the declaration of Otto's succession be announced to the National Assembly and to the Regent, Admiral Horthy. The request was refused on the ground that the National Assembly had passed a law annulling the claims of the Hapsburgs to the throne of Hungary. In November the organization of a Fascisti group, to the number of several thousand and after the model of the Italian group, planned an extreme nationalist movement to direct the destinies of Hungary regardless of the wishes of the National Assembly. The leader of the movement was the former Premier, Stefan Friedrich. On 12 November it was ordered suppressed and its organization dissolved. The order, however, was not complied with and at the end of the year the movement was increasing rapidly. The Interallied Territorial Commission announced in December the completion of its map of Hungary. It reported that its decisions were mostly in favor of Hungary, but this was disputed as only 35,000 acres from the lost territories were handed back. In December an envoy was dispatched to London to seek a reduction of the reparations imposed on Hungary by the treaty of peace. It was alleged that a full enforcement of the reparations would result in the complete economic ruin of the country.

HUNTER COLLEGE OF THE CITY OF NEW YORK, a non-sectarian educational institution for women, founded in 1870 and maintained by the municipality in 1890. In 1922-23 it had a faculty of 300 members, 8,500 students, property valued at \$4,000,000 and an income for the year 1922 of \$894,000. George Samler Davis, LL.D., is president.

HURON COLLEGE, a co-educational institution, located at Huron, S. Dak. Under the name of Pierre University it was founded in 1883 and the name was changed to Huron College in 1898. Although non-sectarian it is under the auspices of the Presbyterian Church. In 1922-23 it had a faculty of 24 members, property valued at \$384,594 and an income of \$105,000. Rev. George Shannon McCune, D. D., is president. The student enrollment was not given.

HUTCHINS, Robert Maynard, American educator: b. Brooklyn, N. Y., 17 June 1899. He is the son of the Rev. William James Hutchins, D.D., president of the Berea College. After preparation for college at Oberlin Academy, he studied two years, 1915-16, at Oberlin, but left to enter the Army. In September 1917, he enlisted in the Army Ambulance Service and was in Europe from March, 1918 to April, 1919, stationed in Italy. In recognition of his service he was given the Croce di Guerri. After his discharge, he entered Yale in 1919 and was graduated in 1921. He was class orator and won the De Forest prize awarded to that "scholar of the senior class who shall write and pronounce an English oration in the best manner." Mr. Hutchins then became master of the Lake Placid-Florida School. On 9 Dec. 1922, he was elected by the Yale Corporation secretary of the University, succeeding the Rev. Anson Phelps Stokes.

HYDROELECTRIC DEVELOPMENT.

Due to the World War, the increased cost of coal and the enormous amount of available hydraulic energy, added attention is being paid the world over, and especially in North America, to the utilization of these water-power resources. The annual report of the United States Power Commission (November 1922) shows that during the past two years it has received 357 applications for water-power developments which aggregate more than 21,000,000 horsepower. This, it is asserted, is more than double the existing water-power installation of the United States and more than six times the aggregate of all applications for power sites under Federal control in the preceding 20 years. The great benefit to mankind that will result from the development of the world's water-power resources lies not only in that such development will produce cheaper power and light, but every 35 hydrohorsepower developed will release one laboring man's effort for one year for a more profitable engagement. Further, 70 times more labor is required to produce a given quantity of steam electric power than to produce an equal amount of hydroelectric power—labor that could be utilized in other fields, such as agriculture and industry. And, as every hydrohorsepower developed saves on an average more than 10 tons of coal per annum, anything like a thorough development of the world's water-power resources should result in an enormous saving of fuel and a probable reduction in coal prices. But nevertheless, it is occasionally cheaper to generate electric current by means of coal than by water-power, because the first cost—that is the installation cost, on which the yearly interest must be earned—in many water-power developments, is enormous. However, such cases are isolated.

With the demand for more and cheaper power, water-powers are being developed on a scale never attempted before and generating units are being installed in sizes that would have been astonishing a short while ago. Just as the designing engineer of a steam-power plant endeavors to produce as much power as possible from one pound of coal, so the designer of a hydroelectric plant strives to utilize every drop of water and convert it into useful power with the minimum amount of loss and at the least cost. Nearly half the potential water-power of the world is in Africa, for that country is a great plateau, on which the streams become large before they fall to the sea, and they fall rather abruptly. Asia, though 50 per cent larger than Africa, ranks second in water-power resources. North America, South America and Europe have water-power resources that rank in the order in which the continents are named, which is also the order of their respective areas. The potential water-power of the world is estimated at 439,000,000 horsepower, when the streams are at the ordinary low-water stage, and the present installed capacity is 23,000,000 horsepower, or approximately 5 per cent of the estimated potential capacity. However, probably only 2 to 3 per cent of the potential power has been developed. Succeeding paragraphs show the estimated water-power already developed, and those de-

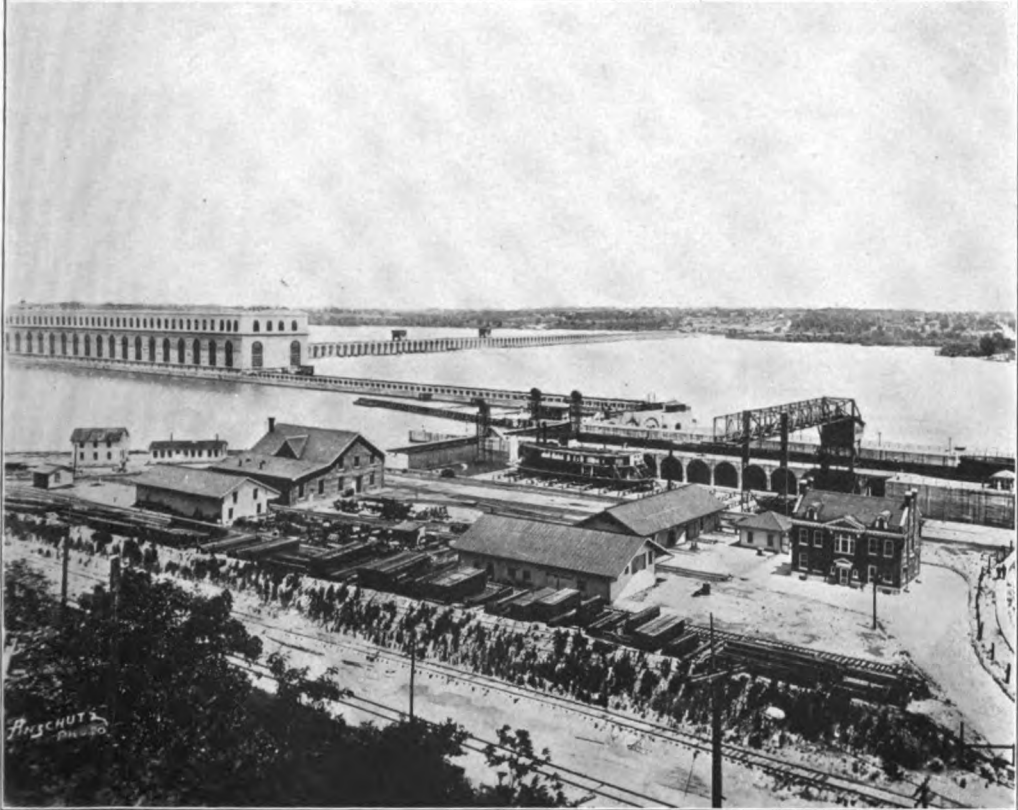
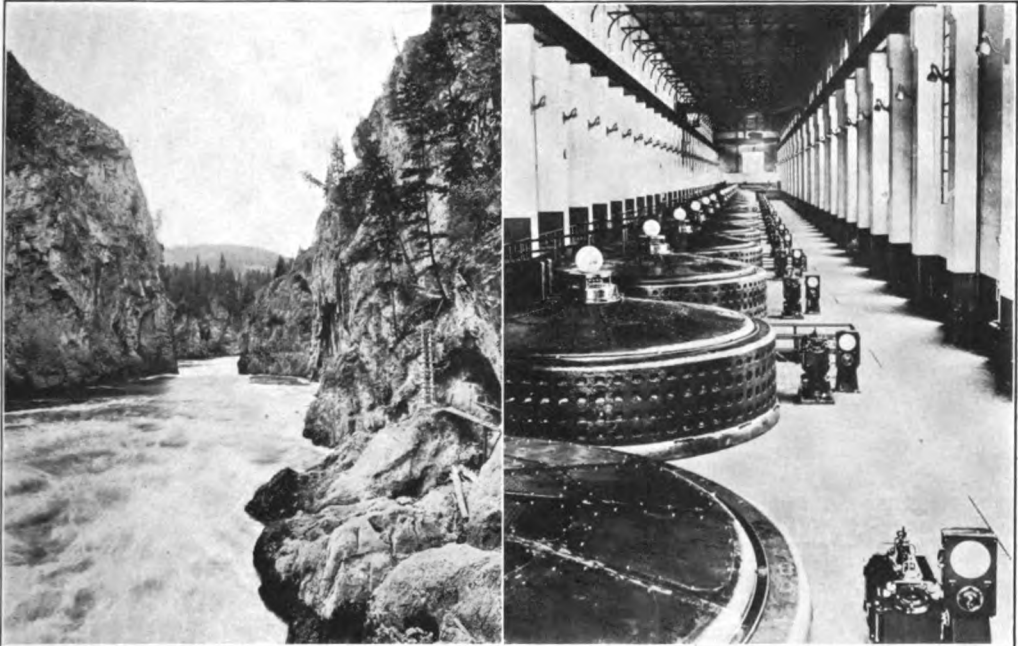
velopments under consideration, expressed in horsepower; they show also the estimated possible total developments expressed in potential horsepower. The reasonable estimate of the potential power here given amounts to nearly four times the world's present total used power from all sources.

North America—Middle Atlantic Area.—In this, the most densely-populated part of the Western Hemisphere, the large demand for power has resulted in the utilization of many water-power sites where they could be easily developed. In New England, water-power has been extensively used for various purposes since Colonial days, and the installed capacity is greater than the estimated potential capacity at low water. The total potential power, 95 per cent of the time, on eight of the principal rivers in Maine is estimated at 370,000 horsepower, which might be increased by storage to 550,000 horsepower. In New Brunswick, Nova Scotia and Prince Edward Island the potential power is estimated at 400,000 horsepower, of which 54,000 horsepower, or 13 per cent has been developed. The plant installed in the Androscoggin River basin in Maine, has a capacity of 121,000 horsepower; other developments on this same river, in New Hampshire, have a capacity, at 60 per cent, of 47,000 horsepower. On the Merrimack River in Massachusetts 26,000 horsepower is developed and in New Hampshire 22,000 horsepower. Four plants on Deerfield River have an installed capacity of 58,000 horsepower, and 66,000 horsepower is developed on the Connecticut River, at Turner's Falls. On the latter river, at Holyoke, there is a number of smaller plants with a total capacity of 4,800 horsepower. Plants on the Hudson River at Spier's Falls develop 38,000 horsepower; on the Mohawk River at Cohoes, 30,000 horsepower; on West Canada Creek at Trenton Falls, 28,000 horsepower; on the Susquehanna River at McCall's Ferry, Pa., 118,000 horsepower. On the Hudson River, near Glens Falls, are four plants with a total capacity of 40,000 horsepower, used in the manufacture of paper.

South Atlantic and the Eastern Gulf Area.—

This section includes the basins of all streams flowing into the Atlantic Ocean and the Mississippi River, in which there are a number of large plants. For instance in North Carolina are plants developing electrical energy as follows: At Badin, 81,000 horsepower; at Blewit, 44,000 horsepower, on the Yadkin River, and at Bridgewater, 36,000 horsepower; at Lookout Shoals, 30,000 horsepower. There are other large plants on Catawba River, and on Cape Fear and Neuse rivers. In South Carolina, on the Catawba River, are plants at Fishing Creek, Great Falls and Rock Creek, with a total capacity of 130,000 horsepower. The largest single water-power plant in South Carolina, 90,000 horsepower, is on the Wateree River. On Broad River, at the Ninety-nine Islands, is a 31,000 horsepower plant, and further down the river are two plants with a combined capacity of 26,000 horsepower. In Georgia, at Tallulah Falls of the Tallulah River, is a plant of 90,000 horsepower; on the Savannah River near Augusta there is a plant of 18,000 horsepower.

HYDROELECTRIC DEVELOPMENT



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1. Undeveloped power site, Pend Oreille River near Spokane, Wash.
2. Huge generators of the Keokuk Power Plant on the Mississippi River
3. Keokuk Dam and power house

Among the proposed plants in the Savannah River basin are one of 75,000 horsepower on Tugaloo River and one of 75,000 horsepower on the Savannah at Calhoun Falls. In Alabama there is a 100,000 horsepower plant on Coosa River at Lock 12, and another plant of about the same capacity is to be constructed on this river near Gadsden. In general, the South Atlantic area is served by 12 large power companies that have plants in this and adjacent drainage areas. The systems are interconnected and have an installed capacity of more than 1,200,000 horsepower. The minimum potential water-power of this drainage area is about 2,000,000 horsepower, the maximum is twice as much, and the developed water-power is nearly 1,500,000 horsepower.

Ohio River Area.—This area includes the entire drainage basin of the Ohio River and its tributary streams. The plants on Ocoee River have a capacity of 45,000 horsepower, and one at Hales Bar develops 54,000 horsepower. At Muscle Shoals, on the Tennessee River, in Alabama, the United States government started to construct a plant with an initial capacity of 120,000 horsepower. The continuous output to be made available here is about 72,000 horsepower, and except in dry years it will be about 100,000 horsepower. A series of plants to be built on Little Tennessee River by the Aluminum Company of America will have an aggregate capacity of 400,000 horsepower. One of these plants, with a capacity 96,000 horsepower, is about completed. At 22 undeveloped power sites on the Tennessee River and its tributaries in Tennessee the potential power is more than 700,000 horsepower and, with storage, nearly 900,000 horsepower. This does not include the 400,000 horsepower to be developed on Little Tennessee River.

Saint Lawrence Area.—This section includes the drainage basin of the Great Lakes and the Saint Lawrence River to its mouth at Pointe des Monts. The water-power sites are fairly well distributed through the area, the provinces of Quebec and Ontario being especially favored, but in the region around Lake Erie there is relatively little potential power. Of the tributaries of Lake Superior, Saint Louis River furnishes 57,000 horsepower at a plant near Duluth, Minn., and Kaministiquia River furnishes 34,000 horsepower near Fort William, Ontario. On Saint Marys River, which connects Lakes Superior and Huron, 34,000 horsepower is developed in the United States and 17,000 horsepower in Canada. The total potential power on Saint Marys River is about 90,000 horsepower. The tributaries of Lake Huron in Ontario can furnish 160,000 horsepower, of which 56,000 horsepower is developed. In Michigan, on Au Sable River, there are plants that supply 64,000 horsepower for municipal use. At Niagara Falls, on Niagara River, which connects Lakes Erie and Ontario, are the finest and greatest power sites in North America. Here are combined a high-head waterfall that is easily developed, a large uniform flow and a market for the power. The unique scenic beauty of the falls has prevented the complete utilization of the site, but the plants in operation have a capacity of 870,000

horsepower, of which 385,500 horsepower is on the United States side. The power actually developed amounts to about 700,000 horsepower. To this total should be added 12,000 horsepower developed on the Welland Canal and 42,000 horsepower developed at Decew Falls. A license has been granted by the Federal Power Commission that will increase to 500,000 horsepower the installed capacity on the United States side of the Niagara River. The Hydroelectric Power Commission of Ontario is now constructing an additional plant of 300,000 horsepower initial capacity and 540,000 ultimate capacity. If the total flow of the river were used the falls would furnish about 6,000,000 horsepower. A plan whereby 60 per cent of the total flow of the river can be diverted for development is being considered. Of the northern tributaries of Lake Ontario, Trent River furnishes 45,000 horsepower out of the 75,000 available. Of the southern tributaries, Genesee River furnishes 51,000 horsepower near Rochester, N. Y. The total capacity of the plants now in operation on Black River and its tributaries is 104,000 horsepower and on Oswegatchie River 25,000 horsepower. The potential power of Saint Lawrence River at normal low water, between the outlet of Lake Ontario and Lake Saint Francis, is 1,000,000 horsepower, of which half would belong to the United States. Near Massena, N. Y., above Lake Saint Francis, a plant having the capacity of 76,000 horsepower is used in the production of aluminum. Between Lake Saint Francis and tidewater at Montreal the potential power at low water is 2,000,000 horsepower, all in Canada. Of this amount 192,000 horsepower has already been developed by four plants at Cedar Rapids, Saint Timothee, Soulanges Canal and Lachine Rapids. Of the tributaries of the Saint Lawrence from the north, Ottawa River has 690,000 potential horsepower, of which 71,000 has been developed. Saint Maurice River has 650,000 potential horsepower. One plant at Shawinigan Falls has a capacity of 148,500 horsepower, another, at Grand Mere Falls, has a capacity of 120,000 horsepower. Saguenay River, another tributary of the Saint Lawrence, could supply 300,000 horsepower, and with a small amount of storage in Lake Saint John the power could be doubled. Between the Saguenay and Atlantic Ocean there are nine large tributaries of the Saint Lawrence that could furnish a total of more than 1,000,000 horsepower. The developed power of the Saint Lawrence area aggregates more than 2,500,000 horsepower, and the potential power is estimated at 10,000,000 horsepower on the assumption that 60 per cent of the available flow at Niagara Falls may be diverted for this use.

Upper Mississippi Area.—This area includes that part of the drainage basin of the Mississippi River that lies north of Ohio on the east and the Missouri River on the west. In Minnesota, the plant on the Mississippi River near Minneapolis and Saint Paul has a capacity of 60,000 horsepower. In Wisconsin the plants on Wisconsin River have a total capacity of 90,000 horsepower. There is a plant of 45,000 horsepower on Chippewa River near Chippewa Falls. In Illinois is a 45,000 horsepower plant at Lock-

port on the Sanitary Canal which diverts water from Lake Michigan. On the Mississippi at Keokuk, Iowa, is a plant with a rated capacity of 170,000 horsepower. Most of this power is transmitted to Saint Louis. The potential power of this area is estimated at about 1,000,000 horsepower, of which 600,000 has been developed.

Missouri River Area includes the entire drainage basin of the Missouri River. Six plants having a combined capacity of 220,000 horsepower have been constructed at Great Falls, Mont., and the potential power between Great Falls and Canyon Ferry, near Helena is 90,000 horsepower. A 165,000 horsepower plant on Big Horn River near Hardin, Mont., is proposed. The total potential power of this basin in Montana is about 700,000 horsepower. By using Yellowstone Lake for storage 450,000 horsepower would be available on the Yellowstone River; from there to the northern boundary of the Yellowstone Park, a distance of about 50 miles, is one fall of 109 feet and another of 308 feet. In Colorado there is a plant of 21,000 horsepower. There is also some undeveloped power on the Missouri in South Dakota.

Lower Mississippi Area.—This territory embraces the parts of the Mississippi drainage basin that lie south of the Mississippi and Ohio. The principal tributaries of the Mississippi in this stretch, the Arkansas and Red rivers, enter from the west. There are only a few water-power plants in this area and all are small.

Western Gulf Area.—This includes the drainage basin of all streams that flow into the Gulf of Mexico between the Mississippi River and Cape Catoche in Yucatan. In Mexico a power plant on Conchos River near Santa Rosalia has a capacity of 37,000 horsepower. A plant on Necaxa and Tenango rivers, operating under a static head of 1,452 feet, has a capacity of 40,000 horsepower. From it power is transmitted 160 miles to the City of Mexico. The undeveloped power in Mexico is considerable, for instance, on the Necaxa an additional 50,000 horsepower and on the Rio Blanco 200,000 horsepower could be developed.

Gulf of California.—This section includes the Colorado River drainage basin in the United States and extends to Capes San Lucas and Corrientes, in Mexico. The potential power at 18 of the largest sites in the Colorado River basin has been estimated at 2,000,000 to 6,000,000 horsepower, the amount depending on the method of development. About 78,000 horsepower has been developed on Grand River and its tributaries, and 26,000 horsepower on the Salt River irrigation system of the United States Reclamation Service. In Mexico this area includes Yaqui, Mayo, Fuerte and Santiago rivers. South of the city of Guadalajara in the state of Michoacan is a 26,000 horsepower plant. Probably less than 200,000 horsepower is developed in this drainage area, including territory both in the United States and in Mexico.

Great Basin Area.—This includes the inland basin between the Rocky Mountains and the Sierra Nevada. More than 100,000 horsepower has been developed in Utah, mostly in small plants. There are three plants on Bear

River in Idaho, and one on the same river in Utah, that have a combined capacity of 119,000 horsepower. In Nevada 12,000 horsepower is developed on Truckee River at four plants, and in California 38,000 horsepower is developed on Bishop Creek. The total potential power of this basin at low water with storage might amount to 500,000 horsepower. The plants now constructed have a capacity of 250,000 horsepower.

Upper South Pacific Area.—This territory includes the drainage basins of all streams that flow into the Pacific Ocean between the northern boundary of the Klamath River basin and the south end of Lower California, at Cape San Lucas. Pit River could yield at low water about 450,000 horsepower. On Feather River one company has plants in operation or under construction to supply 145,000 horsepower, and another now planned will develop a total of 700,000 horsepower. Other plants on tributaries of Feather River have an aggregate capacity of 60,000 horsepower. Other developments on tributaries of the Sacramento River, including six plants on Cow and Battle creeks, have a total capacity of 54,000 horsepower, two at Butte Creek develop 29,000 horsepower and seven on Bear and Yuba rivers 105,000 horsepower. Six projected plants on the North Fork of Kings River and one on Kings River will have a combined capacity of 272,000 horsepower. On Kern River and its tributaries there are now in operation plants with an aggregate of 45,000 horsepower; a 40,000 horsepower plant is under construction, and two plants of 40,000 horsepower each are planned. Consideration is being given to the installation of a series of plants on Big Creek, Pitman Creek, Stevenson Creek and San Joaquin River with a total capacity of 868,000 horsepower. The present installed capacity of two plants on these sites is 94,000 horsepower, and plants of 57,000 horsepower are under construction. On Stanislaus River there are plants that develop 68,000 horsepower. The Tuolumne River, which supplies water for the municipal needs of San Francisco, and the fall available in the aqueduct will generate 157,000 continuous horsepower, with a peak capacity of 200,000 horsepower. Plants already built along the Los Angeles Aqueduct in the Great Basin area have a total capacity of 100,000 horsepower. The total developed power in this area in California is more than 800,000 horsepower and, at the present rate of increase, will soon be 1,000,000 horsepower. The potential power at low water is estimated at a little more than 3,000,000 horsepower, but the amount can probably be doubled by storage.

Lower North Pacific Area.—The section referred to includes the drainage basins of all streams that flow into the Pacific Ocean between the Klamath River basin and the United States and Canadian boundary. In Montana there is a plant of 40,000 horsepower on Clark Fork at Thompson Falls. Flathead River, a tributary of Clark Fork, can produce 300,000 continuous horsepower at six sites below Flathead Lake; with storage in this lake, the capacity could be brought up to 500,000 horsepower. In Washington a 200,000 horsepower

plant on Clark Fork is projected. In eastern Washington 189,000 horsepower is developed. The principal plants are near Spokane. In western Washington there are two plants of 29,000 horsepower total capacity on Snoqualmie River, one of 60,000 horsepower on White River, and one of 18,000 horsepower on Salmon River. Tacoma has a plant of 32,000 horsepower on Nisqually River, and Seattle has one of 21,000 horsepower on Cedar River. In Oregon are a 25,000 and a 15,000 horsepower plant on the Willamette River. On Clackamas River two plants have a total capacity of 46,000 horsepower, and Little Sandy River furnishes 19,000 horsepower, mostly for use in Portland. In British Columbia two plants on Kootenai River at Bonnington Falls have a total capacity of 42,000 horsepower. Of the undeveloped sites in the lower North Pacific area the one on which the most power can be developed is The Dalles, on Columbia River in Oregon-Washington, where about 300,000 continuous horsepower can be developed and an equal additional amount can be made available for eight months of the year. The potential power of Deschutes River has been estimated at 457,000 horsepower. On Snake River between Huntington, Ore., and Lewiston, Ida., there could be developed 90 per cent of the flow, or 800,000 horsepower, after the river has been regulated for irrigation. By diverting the Salmon River into the Snake River a total of 345,000 horsepower could be obtained 90 per cent of the time by using the present flow, or 298,000 horsepower after the river has been regulated for irrigation. Another 250,000 horsepower could be developed at 26 sites on the Salmon River. The total developed power in this area is 750,000 horsepower, and the potential power is about 11,000,000 horsepower.

Middle North Pacific Area.—This section includes the drainage basins of all streams that flow into the Pacific Ocean from the United States-Canada boundary to and including Yakutat Bay, Alaska. At Lakes Coquiltam and Buntzen, 84,000 horsepower is developed. On Stave River, six miles from its junction with the Fraser River, there is a plant of 40,000 horsepower, and at the mouth of the Jordan River there is a plant of 25,000 horsepower. The total development in this area is more than 250,000 horsepower. The undeveloped power at known sites is between 2,000,000 and 3,000,000 horsepower, and probably many large sites are still unknown.

Upper North Pacific Area.—This section includes the drainage basins of all streams that flow into the Pacific Ocean between Yakutat Bay and Cape Prince of Wales. The largest plants are one of 15,000 horsepower near Fort Snettisham, south of Juneau, and one of 10,000 horsepower on the north fork of the Klondike River, 26 miles from Dawson. The total developed power in this area is about 65,000 horsepower, mostly used in mining. The undeveloped power is unknown but may amount to 2,500,000 horsepower.

Arctic Ocean Area.—This section includes the northern parts of Alaska, Canada and Greenland, the limiting points being Capes Prince of Wales and Wilson, Dorchester and

Dyer, Holstenborg and Jensen. There is a power site on Athabaska River, but the power available is but 9,000 horsepower. Little is known of the undeveloped power resources of this area, but there seems to be no great concentration of potential power.

Hudson Bay Area.—This includes the drainage basins of all streams tributary to Hudson Bay, to Fox Channel south of Capes Wilson and Dorchester, and to Hudson Strait west of Cape Wiggins and Olga River. Three plants on Bow River, together develop 32,000 horsepower. A total of 48,000 continuous horsepower may be developed on Olga River, with storage. On Winnipeg River 250,000 continuous horsepower, including that of the present plants, may be developed without storage, and 420,000 horsepower can be developed by storage. Two plants on this river having a combined capacity of 82,000 horsepower, supply the city of Winnipeg. Another plant with an initial capacity of 84,000 horsepower and an ultimate capacity of 169,000 horsepower is now under construction. The Winnipeg River, without any regulation could develop at 19 sites, 2,500,000 continuous horsepower. On Abitibi River at Iroquois Falls, Ontario, there is a 53,000 horsepower plant. Another 22,000 horsepower plant in this area has been developed and about 250,000 horsepower is undeveloped. On Rainy River, a tributary of Lake of the Woods are two plants with a combined capacity of 24,000 horsepower. The total developed power in this area is about 225,000 horsepower, and the potential power is estimated at 5,500,000 horsepower.

North Atlantic Area.—This section includes the drainage basins of all streams that flow into the Atlantic Ocean east of Hudson Bay and north of Saint Lawrence River and Cabot Strait. Little is known of the potential power of Greenland. A 75,000 horsepower plant is said to be feasible on Bay d'Est River, in Newfoundland. The only large power plants in this area are in Newfoundland, where 60,000 horsepower is developed, used mainly by pulp and paper mills.

Lower South Pacific Area.—This is a narrow belt of high land between Cape Corrientes and the eastern boundary of Panama, in southern Mexico and Central America. The plants in this area are all small in size and the largest, with a capacity of but 2,700 horsepower, is in Salvador. The undeveloped power in Salvador is estimated at 200,000 horsepower. Nicaragua has considerable potential power but very little has been developed. In Costa Rica the total development is 15,000 horsepower.

Caribbean Sea Area.—In this is included a part of Yucatan and the northern and eastern slopes of Central America. It also includes all of the West Indies. Comparatively little potential power is here available. In Panama, the only development yields 13,000 horsepower. A plant of 3,000 horsepower on Matagua River, is the biggest in Cuba. In the Dominican Republic a 4,000 horsepower plant on a tributary of Rio Yaque del Norte is proposed. Porto Rico has developed 8,150 horsepower out of a potential total of 25,000 horsepower.

The figures of the water-power resources of the United States in the following table are

based on estimates made by the United States Geological Survey in 1908 for the National Conservation Commission and revised in 1921.

WATER-POWER RESOURCES OF THE UNITED STATES.

DIVISION	Total potential power		Installed capacity of water wheels
	Minimum Horse-power	Maximum Horse-power	Horse-power
New England.....	868,000	1,605,000	1,381,000
Middle Atlantic division.....	1,357,000	2,488,000	1,735,000
East North Central division.....	832,000	1,604,000	812,000
West North Central division.....	902,000	1,956,000	503,000
South Atlantic division.....	2,346,000	4,257,000	1,381,500
East South Central division.....	1,087,000	1,964,000	504,500
West South Central division.....	353,000	822,000	25,700
Mountain division.....	8,694,000	16,181,000	1,006,600
Pacific division.....	11,504,000	23,078,000	1,893,000
United States.....	27,943,000	53,905,000	9,242,700

In Canada the total developed water-power amounted in 1920 to 2,417,806 horsepower. These figures do not include plants under construction in 1920, as follows: In Ontario, 500,000; Quebec, 137,000; Manitoba, 77,000; Nova Scotia, 15,000, and New Brunswick, 18,000 horsepower, respectively. The undeveloped water-power is estimated by the Dominion authorities, according to provinces, as follows:

	Horsepower
Yukon.....	100,000
British Columbia.....	3,000,000
Alberta.....	466,000
Saskatchewan.....	567,000
Manitoba.....	3,218,000
Ontario.....	5,800,000
Quebec.....	6,000,000
New Brunswick.....	300,000
Nova Scotia.....	100,000
Prince Edward Island.....	3,000
Total.....	19,554,000

South America.—For convenience in reference the continent has been divided into drainage areas, and the principal developed power and known available potential power of each area are given.

North Pacific Ocean Area.—A narrow strip including parts of Colombia, Ecuador and Peru draining into the Pacific Ocean, the total potential power of which is estimated at 1,500,000 horsepower.

South Pacific Ocean Area.—This area lies wholly in Chile and includes the belt draining into the Strait of Magellan. According to a census made in 1916 the developed power in Chile amounts to 39,600 horsepower. To this must be added a 16,000 horsepower plant of the Braden Copper Company in Rancagua. The undeveloped water-power in this area is estimated at 1,800,000 horsepower.

South Islands Area.—This section includes the islands south of the Strait of Magellan and

the Falkland Islands. No developed water-power is known but the potential power is estimated at 800,000 horsepower.

Lower South Atlantic Ocean Area.—This area extends from the Strait of Magellan to Rio de la Plata and from the Atlantic Ocean to the Andes. The largest power plant in this area is at Mendoza, where about 2,700 horsepower is developed, but a plant having an ultimate capacity of 16,000 horsepower is under construction. The potential power in this area is estimated at 2,100,000 horsepower.

Rio de la Plata Area.—The chief tributaries of Rio de la Plata are the Paraná, the most important power stream in South America, and the Uruguay, which drain all of Paraguay and part of Uruguay, Argentina, Bolivia and Brazil. Along these rivers and their tributaries there are a number of falls, of which the best known is that at Maribondo, on Rio Grande near São Paulo, Brazil. The power here available has been estimated at 600,000 horsepower. The Tiete, another tributary of the Paraná, is rich in water power, and about 40,000 horsepower has been developed to supply the city of São Paulo. The principal falls on the Tiete are the Avanhanda, with 60,000 horsepower, and the Itapura, with 50,000 horsepower. At about the point where the Paraná becomes the boundary between Brazil and Paraguay the river plunges over the great cataracts of Bete Quedas (seven falls) with a total height of 375 feet. Different authorities estimate the available water power here at 20,000,000 to 40,000,000 horsepower. The government of Argentina is investigating the possible development of Iguassu Falls and the transmission of the power 800 miles, to Buenos Aires. At 70 per cent efficiency, 325,000 horsepower is available, and it is proposed to develop 228,000 horsepower, of which 168,000 horsepower will be furnished to Buenos Aires. On the Uruguay near Salto, two dams have been proposed for improving navigation, and the project of developing 60,000 horsepower, may be carried out by the government of Uruguay. The principal developed powers in the Rio de la Plata drainage basin are 40,000 horsepower on the Tiete to supply São Paulo, Brazil; 12,500 horsepower near Cordoba and 5,000 horsepower at Tucuman, Argentina; and 500 horsepower near Potosi, Bolivia. The potential water power of this drainage basin is estimated at about 16,000,000 horsepower.

Upper South Atlantic Area embraces the Atlantic drainage basin from Rio de la Plata to the São Francisco. At the well-known Herval Falls, near Taquara, north of Porto Alegre, there is a sheer drop of 400 feet, which would afford a capacity of 100,000 horsepower. Most of the rivers are short coastal streams, but their fall is considerable. The principal rivers are the Jacahy, Parahyba, Doce, Jaquitinhonha, Pardo, and Contas. All are good power streams and are easy of development. At Bracuhy Falls, near Rio de Janeiro, there is a total drop of 2,887 feet. Near Rio de Janeiro about 75,000 horsepower has been developed on the Pirahy, a tributary of the Parahyba. On another tributary of the Parahyba, 13,500 horsepower has been developed to supply the town of Nictheroy. On the Paraguassu River 20,000 horsepower has

been developed, and an undeveloped fall on this river has a capacity of 21,000 horsepower. The total potential power in the upper south Atlantic area is estimated at 3,700,000 horsepower.

Rio São Francisco Area.—Included in this area is the entire drainage basin of Rio São Francisco. The total power available at the falls of this river is estimated at 2,000,000 horsepower, and that available during periods of low water at 400,000 horsepower.

Lower North Atlantic Area.—This includes the basins of the streams that enter the Atlantic Ocean between the São Francisco and Para. No power sites of great value are known in this area, but its total potential power is estimated at 1,700,000 horsepower.

Para River Area.—This includes the tributaries of Para River which drain a long stretch of country bordered on the west by the basin of the Amazon. The total potential power of the area is estimated at 600,000 horsepower.

Amazon River Area.—This area includes the entire basin of the Amazon. Most of the potential water power of this area is in the Andes, in Bolivia, Peru, Ecuador, and Colombia, and on tributaries from the south in Brazil which have considerable flow and a series of cataracts in regions that are largely unexplored. All the streams in this area have large falls but the developed power of the Amazon basin is very small, probably not more than 15,000 to 20,000 horsepower. The potential power is estimated at 16,000,000 horsepower.

Upper North Atlantic Area.—This area includes the streams draining into the Atlantic Ocean between the Amazon and the Orinoco. It embraces British, Dutch and French Guiana and small parts of Brazil and Venezuela. The Potaro, a tributary of the Essequibo, the richest power stream, has an estimated potential power of 125,000 horsepower. So far as known there are no developed water powers and the total potential power is estimated at 4,000,000 horsepower.

Orinoco Area.—This includes all streams tributary to the Orinoco River, which ranks third in volume among the rivers of South America, being exceeded by the Amazon and Rio de la Plata. The total potential power of this area is estimated at 2,000,000 horsepower.

Caribbean Sea Area.—As here considered this area extends from the mouth of the Orinoco to Panama. In Venezuela it includes a narrow strip along the coast. About 4,500 horsepower has been developed near Caracas, in Venezuela, and perhaps 25,000 horsepower in Colombia. Bogota has a 5,500 horsepower plant. The total potential power of the area is estimated at 1,800,000 horsepower.

Interior Basins.—These include lakes Titicaca and Poopo having a drainage from more than 40,000 square miles in Bolivia, Peru and Chile. So far as known there are no developed water powers in this area, and the potential power is small. There are many other small inland basins in South America, especially in Argentina.

Europe.—Norway.—No systematic survey of water power resources has been made in Norway and the estimates of total power available vary widely. The greater part of the power resources is in southern Norway, where development is

practicable and will be limited probably only by demand. It is estimated that the amount of power that may be commercially developed is at least 5,500,000 horsepower; another estimate calls for 6,500,000 horsepower. The Norwegian Year Book for 1919 reports the undeveloped horsepower in southern Norway, as 9,531,000 horsepower, and the developed at 1,250,000 horsepower. The following are some of the principal developments: Lower Glommen River, in Ostfold, four plants, 300,000 horsepower; Maane River at Rjukan, two plants, 239,000 horsepower; Tysse i Odda, two plants 300,000 horsepower; Matre River, 96,000 horsepower; Lilledals River, 91,700 horsepower, and one at Norefallene, on Nummedalslaagen, in Buskerud, 196,000 horsepower. The utilization of water power for chemical industries in Norway is particularly noteworthy. Water power has been developed by the state to some extent, though less than in Sweden. Unutilized sites owned by the state have a capacity after regulation of about 1,000,000 horsepower, of which 200,000 to 300,000 horsepower is reserved for the electrification of railroads.

Sweden.—According to the Hydrographic Bureau of the Swedish government, Sweden has a potential water power of 6,205,000 horsepower, of which 1,105,000 horsepower has been developed. The most extensive plants are on the Dal, where at the end of 1917 there were 49 plants having a capacity of 240,905 horsepower, on the Göta, 22 plants having a capacity of 149,684 horsepower, and, on the Lule, four plants having a capacity of 76,635 horsepower. Under the administration of the Royal Waterfall Board, plants have been erected at Trollhättan, on the Göta (155,000 horsepower) at Elfkärleö (75,000 horsepower), and on the Lule at Porjus (75,000 horsepower).

Russia.—With an uncertain boundary at present time, Russia has a minimum potential water power as follows: Central Russia, 300,000; Baltic region, 150,000; Ural region, 500,000 and Lake region, 1,000,000 horsepower, or a total of 1,950,000. The maximum is estimated at 5,800,000 potential horsepower.

Finland.—The estimated potential power of Finland is 1,500,000 to 2,500,000 horsepower; developed, up to 1920, 185,000 horsepower.

Poland.—This country has an estimated undeveloped water power of about 175,000 horsepower.

Estonia, Latvia and Lithuania.—The developed power is about 20,000 horsepower; the potential power, about 200,000 horsepower.

Germany.—A large percentage of Germany's comparatively small water power resources has been utilized. The largest water power resources are in Bavaria. The southern tributaries of the Danube can furnish 1,900,000 horsepower, but for various reasons only 37 per cent, or 703,000 horsepower is capable of development. The reduction of the last figure by an efficiency factor of 75 per cent gives 527,000 effective horsepower. In Bavaria there is further available 138,000 effective horsepower, thus making a total of 665,000 horsepower. The possible effective horsepower for the principal German states is as follows: Prussia, 250,000; Baden, 280,000;

Württemberg, 58,000, and Bavaria, 665,000, or a total of 1,250,000 horsepower.

Austria.—It is estimated that Austria has a total potential water power of 3,000,000 horsepower, of which 2,000,000 horsepower is available at 283 surveyed sites. Plants at 16 of these sites are under construction. The estimated developed water power in 1920 amounted to 150,000 horsepower.

Hungary.—The potential power of Hungary is 150,000 horsepower, while 30,000 horsepower has been developed.

Czechoslovakia.—In 1920, this country had 40,000 developed horsepower and it has a potential power of 420,000 horsepower.

Jugoslavia.—Comparatively Jugoslavia has great water power resources. More than 230,000 horsepower may be obtained in the basin of Lim River; the Tara may produce as much as 340,000 horsepower; Centina River is capable of furnishing 200,000 horsepower. A plant of 31,600 horsepower, in operation since 1906, furnishes current for the manufacture of carbide. The total potential power is estimated at 2,300,000 horsepower while the developed power in 1920 was 125,000 horsepower.

Rumania.—This country has an estimated potential power, of 1,100,000 horsepower; and has developed 30,000 horsepower.

Bulgaria.—The estimated potential power of Bulgaria is 1,200,000 horsepower; developed, 8,000 horsepower.

Albania.—The estimated potential power of Albania is 500,000 horsepower; developed 1,000 horsepower.

Greece.—With an estimated potential power of 250,000 horsepower; Greece has developed 6,300 horsepower.

Italy.—The estimated potential power of Italy is 5,500,000 horsepower at ordinary river stage, 3,800,000 horsepower at ordinary low flow, and 2,700,000 horsepower at extreme low flow. A total of about 1,100,000 horsepower has been developed.

Switzerland.—The estimated potential water power of Switzerland is 750,000 horsepower at low water, 2,500,000 horsepower for flow available six months of the year, and 3,000,000 horsepower with storage. In 1920 the developed power amounted to 1,067,000 horsepower. The largest plant installed is on the Aar River at Olten. It has a capacity of 80,000 horsepower. A plant at Lake Fully, in the Valais district, utilizes the remarkably high head of 5,413 feet.

Denmark, Netherlands and Belgium.—These countries have but little available water power.

Great Britain.—This country has a number of plants installed. The largest development in the British islands is at Kinlochleven, Scotland, where a 40,000 horsepower plant is used in the production of aluminum. An additional plant at this location, to have a capacity of 72,000 horsepower is planned. The following is the estimated water power in Great Britain and Ireland:

	Twelve hour horsepower	Continuous horsepower
Scotland.....	375,000	200,000
England.....	281,000	150,000
Wales.....	109,000	60,000
Ireland.....	359,000	175,000
	<hr/> 1,124,000	<hr/> 585,000

With the use of storage, as estimated by the British Water Power Resource Committee, a total potential power of 1,000,000 horsepower could be developed. The total developed is 210,000 horsepower.

Iceland.—It is estimated that Iceland has a total potential power of 1,114,000 horsepower.

France.—In 1920 France had an estimated water power already developed, of 1,400,000 horsepower, and a potential power, at low water of 4,700,000 horsepower. The water powers of France are found along the eastern and southern borders, in the Vosges, Jura, Alps, and Pyrenees. The Rhone, itself, has potential power estimated at 822,000 horsepower. If half of the water power of the Rhine in Alsace-Lorraine is utilized there will be about 100,000 horsepower.

Spain.—Spain has already developed 600,000 horsepower, and the surveyed potential power is 4,000,000 horsepower, while the estimated total potential power is 5,000,000 horsepower.

Portugal.—The estimated potential power of Portugal is 300,000 horsepower; developed, 10,000 horsepower.

Arctic Ocean, Caspian Sea, Eastern Mediterranean, Dead Sea and Black Sea.—These areas have but slight water power resources.

West Indian Ocean.—The principal rivers whose waters reach the Indian Ocean between the Red Sea and Cape Comorin are the Tigris and the Euphrates, which drain a large part of Asiatic Turkey, and the Indus, the great river from which India takes its name. On the Tigris at the site of the ancient Nimrod dam, 300,000 horsepower are available. On the Euphrates, near Bagdad, 25,000 horsepower are available. The Euphrates could possibly produce, at different places 325,000 horsepower. The Indus could produce 20,000 horsepower. The Western Ghats, a range of mountains, has a potential power of more than 500,000 horsepower, and a plant of 100,000 horsepower, in the Andra Valley, is under construction. About 43 miles from Bombay, there is the largest hydro-electric plant in operation in Asia outside Japan; it has a capacity of 60,000 horsepower, and will be enlarged to 110,000 horsepower.

East Indian Ocean.—The principal rivers that flow into the Bay of Bengal and drain southern Tibet, more than half of India, and the western part of the Malay Peninsula are the Salwin, Irra-Waddy, Brahmaputra, and Ganges. The potential power of the entire East Indian Ocean drainage area is estimated at 23,000,000 horsepower, of which about 75,000 horsepower is developed.

China Sea.—The area draining into the China Sea extends from Singapore to Yangtsze River and includes the eastern half of the Malay Peninsula, most of Siam, French Indo-China, and a tract in the southern part of the Chinese Republic. Although the potential power in this region is estimated at 13,000,000 horsepower, the plants reported develop only 2,000 horsepower. The Yangtsze River is one of the two main rivers in China, and has a potential estimated power of 10,000,000 horsepower. The Min, a tributary of the Yangtsze, has a fall of 9,000 in 150 miles, it supplies water for a large irrigating system, which was built about 250 B. C.

Middle Pacific Ocean Area.—Includes the continental drainage from Yangtze River to Amur River and the Japanese Islands from Taiwan to Kurile Strait. The total potential power amounts to about 8,600,000 horsepower. At low water it would be about one-half. The developed power amounts to about 1,000,000 horsepower. The government of Taiwan (Formosa), in association with private interest, is building a plant of 130,000 horsepower at the outlet of Lake Candidius on the Dakusikei. The capacity of this plant can be increased to 185,000 horsepower when required. The Amur River has a potential power of 1,500,000 horsepower. No developments are known.

North Pacific Ocean.—Area extending along the north Pacific from Amur River to Bering Strait. This area is one of little rainfall and few power sites, none of which seems to have been utilized.

Africa.—The rainfall in Africa is small; in northern Africa it is less than 10 inches a year. However, there are a few mighty rivers with great potential water powers, but there are only a few small water-power developments. The water power resources as given below are according to the names of the rivers. The Kongo River affords greater water power resources than any other river system in the world and more than all the other rivers in Africa. The Stanley Falls on the Middle Kongo consist of seven cataracts having a total fall of 200 feet in 60 miles. From 10,000,000 to 15,000,000 horsepower could be developed in this section. On the lower Kongo, below Stanley Pool, there are 18 falls and rapids with a total drop of 300 feet in less than 60 miles. More than 100,000,000 horsepower could be developed on these two stretches. However, it is difficult to develop. A scheme for the construction of a 113,000 horsepower plant on the lower Kongo River has been under consideration for use in operating railways. Another plant of 20,000 horsepower at Koni Falls, on the Lufira, a tributary of the upper Lualaba, has been proposed. The Niger River, while navigable on many stretches, is, unlike other African rivers, without rapids and falls. There are no data available as to the potential water power, which power however, is very small. The Kunene River has a minimum flow, which could furnish 80,000 horsepower, but with storage it could furnish 1,500,000 horsepower. On the Orange River are but a few small developments, and great powers can be developed only by the use of storage. On the Limpopo River, at the Toli Azime Falls a development has been proposed for the production of 40,000 horsepower. The great market for power in this region is in the Rand mining district, where the mining companies generate more than 400,000 horsepower by the use of coal. The Zambezi River could furnish several power developments. The principal site is at the Victoria Falls, which is an abrupt fall of 350 feet. In the gorge and rapids below the falls which extend a distance of 50 miles, there is an additional fall of about 1,100 feet. The potential power of the falls and the rapids has been estimated at 750,000 continuous horsepower and would doubtless be much greater at all stages

above low water. Pangani River is fed by the glaciers of Mount Kilimanjaro, the highest mountain in Africa. It has many rapids and falls, and it is estimated that the falls could yield about 70,000 horsepower. The Somerset Nile falls 1,400 feet in 240 miles, and it is estimated that it would yield more than 2,000,000 continuous horsepower. With respect to all other rivers in Africa, as far as water power resources are concerned, little or no information is available; no doubt, because the water powers are comparatively small and there is no demand for power.

Oceanica.—Oceanica includes innumerable islands in the Pacific Ocean, which have a wide range in size, the largest is Australia and the smallest the islands of Micronesia. The North Island of New Zealand has a total potential power of 500,000 horsepower. On South Island there is a potential power of 3,300,000 horsepower. The government of New Zealand has appropriated \$22,000,000 for constructing several water-power plants. It has also taken over the 9,000 horsepower Horahora plant, originally installed by a mining company near Cambridge, and it has appropriated \$7,800,000 to increase the capacity of this plant. The largest plant on South Island is 12,000 horsepower. The developed power in New Zealand amounts to 45,000 horsepower. Tasmania, the so-called Switzerland of the South, has a total developed power of 34,500 horsepower, and the total potential power is estimated at 400,000 horsepower. Australia has a total potential power of 1,300,000 horsepower. The most valuable power sites are on the Clarence and Snowy rivers, where 100,000 and 137,000 horsepower, respectively, can be developed. New Guinea has a potential power of probably about 5,000,000 continuous horsepower. No power plant has been reported. The Philippine Islands have a potential power of about 1,500,000 horsepower. No water power has been developed. Celebes has a minimum potential power of 1,000,000 horsepower. The most promising power sites (100,000 horsepower) are on the Sadang River near Posso Lake. Borneo has a potential power of 2,000,000 horsepower. While the construction of a 100,000 horsepower plant is under consideration, no plants are in operation or under construction. Sumatra has an estimated potential power of 2,000,000 horsepower, of which 8,625 horsepower has been developed. A 3,000 horsepower plant of a Portland cement factory, at Indaroeng, is under construction. Java has an estimated potential power of 500,000 horsepower, of which 12,000 horsepower has been developed. Projects for the development of an additional 85,000 horsepower are under way. Hawaii has no power resources. The streams are small and are used mainly for irrigation.

GENERAL SUMMARY

A summary of the capacity of the world's water-power plants and the world's potential water power, representing 75 per cent of the theoretical power from the flow available at least 75 per cent of the time, is given in the following table, as prepared by the United States Geological Survey, 1921.

HYDROELECTRIC DEVELOPMENT

NORTH AMERICA

	Developed	Potential
Mexico.....	400,000	6,000,000
United States.....	9,243,000	28,000,000
Alaska.....	40,000	2,500,000
Newfoundland.....	60,000	400,000
Canada.....	2,418,000	20,000,000
Costa Rica.....	15,000	1,000,000
Guatemala.....	4,000	1,500,000
Honduras.....	3,000	1,000,000
Nicaragua.....	400	800,000
Salvador.....	2,700	200,000
Panama.....	13,300	500,000
West Indies.....	12,500	150,000
Approximate total.....	12,210,000	62,000,000

SOUTH AMERICA

	Developed	Potential
Argentina.....	25,000	5,000,000
Bolivia.....	12,000	2,000,000
Brazil.....	250,000	25,000,000
British Guiana.....		2,501,000
Dutch Guiana.....		800,000
French Guiana.....		500,000
Chile.....	60,000	2,500,000
Colombia.....	25,000	4,000,000
Ecuador.....	2,500	1,000,000
Paraguay.....	200	2,000,000
Peru.....	36,500	4,500,000
Uruguay.....		300,000
Venezuela.....	12,000	3,000,000
Approximate total.....	424,000	54,000,000

EUROPE

	Developed	Potential
Sweden.....	1,200,000	4,500,000
Norway.....	1,350,000	5,500,000
Finland.....	185,000	1,500,000
Russia.....	100,000	2,000,000
Estonia]		
Latvia.....	20,000	200,000
Lithuania]		
Poland.....	80,000	200,000
Ukraine.....	40,000	425,000
Region of the Caucasus.....	5,000	5,000,000
Hungary.....	30,000	150,000
Czecho-Slovakia.....	50,000	420,000
Jugo-Slavia.....	125,000	2,000,000
Austria.....	205,000	3,000,000
Rumania.....	30,000	1,100,000
Bulgaria.....	8,000	1,200,000
Greece.....	6,000	250,000
Turkey.....		Small
Albania.....	1,000	500,000
Italy.....	1,150,000	3,800,000
Switzerland.....	1,070,000	1,400,000
Germany.....	1,000,000	1,350,000
France.....	1,400,000	4,700,000
British Isles.....	210,000	585,000
Belgium.....	700	Small
Denmark.....	1,500	2,000
Netherlands.....		
Spain.....	600,000	4,000,000
Portugal.....	10,000	300,000
Iceland.....		500,000
Approximate total.....	8,877,000	45,000,000

ASIA

	Developed	Potential
Chinese Republic.....	1,650	20,000,000
India.....	150,000	27,000,000
Asia Minor.....	500	500,000
Arabia.....		
Persia.....		200,000
Afghanistan.....	2,000	500,000
Siberia.....		8,000,000
French Indo-China.....		4,000,000

ASIA—Continued

	Developed	Potential
Siam and Malay States.....	4,500	4,000,000
Chosen.....	2,350	500,000
Japan.....	1,000,000	6,000,000
Approximate total.....	1,160,000	71,000,000

AFRICA

	Developed	Potential
Tangier.....		50,000
Morocco.....		250,000
Algeria.....	130	200,000
Tunis.....		30,000
Tripoli.....		Small
Eritrea.....		Small
British Somali.....		Small
Italian Somali.....		Small
Gold Coast and British Mandate in Togo.....		1,450,000
Liberia.....		4,000,000
Sierra Leone.....		1,700,000
Senegal.....		250,000
Rio de Oro.....		Small
Gambia.....		Small
Portuguese Guinea.....		Small
Union of South Africa.....	5,000	1,600,000
Angola.....	4,000	4,000,000
Southwest Africa (Union of South Africa Mandate).....		150,000
Belgian Congo and Belgian Mandate.....	250	90,000,000
French Congo.....		35,000,000
French Mandate in Kamerun.....		13,000,000
Nigeria and British Mandate in Kamerun.....		9,000,000
Rhodesia.....		2,500,000
Tanganyika (British Mandate).....	800	2,700,000
British Central Africa.....		1,200,000
British East Africa.....	900	4,700,000
Portuguese East Africa.....		3,700,000
Bechuanaland.....		20,000
Abyssinia.....		4,000,000
Egypt.....		600,000
Ivory Coast, Dahomey, and French Mandate in Togo.....		2,850,000
French Guinea.....		2,000,000
French Sudan.....		1,000,000
Madagascar.....	100	5,000,000
Approximate total.....	11,000	190,000,000

OCEANICA

	Developed	Potential
Australia.....		620,000
New Zealand.....	45,000	3,800,000
Philippine Islands.....		1,500,000
Sumatra.....	11,600	2,000,000
Java.....	56,000	500,000
Borneo.....		2,500,000
New Guinea.....		5,000,000
Tasmania.....	34,500	400,000
Celebes.....		1,000,000
Approximate total.....	147,000	17,000,000

RECAPITULATION

	Developed	Potential
North America.....	12,210,000	62,000,000
South America.....	424,000	54,000,000
Europe.....	8,877,000	45,000,000
Asia.....	1,160,000	71,000,000
Africa.....	11,000	190,000,000
Oceanica.....	147,000	17,000,000
Approximate total.....	23,000,000	439,000,000

FRANK KOESTER,
Consulting Engineer; author of "Hydro-
electric Developments and Engineering";
"Steam Electric Power Plants", etc.

I

ICE, Production of. Basing its conclusions upon the latest United States Census figures, taken in connection with other well-known facts, the National City Bank of New York, in the *Trade Record* of 21 Aug 1922, estimated the value, at the plants, of the ice manufactured in the United States at approximately \$150,000,000, of which amount \$137,000,000 worth was produced by regular ice-making establishments and about \$12,500,000 worth by other industries. While the amount of natural ice harvested is nothing like as great as the amount of ice produced by artificial means, nevertheless the value of that cut in 1919 was estimated at \$37,500,000, making the grand total value of the ice produced during the year indicated \$187,000,000. Accepting again the estimate of experts that the price of ice to the ultimate consumer is double the price at the place of production, the total of the sums paid by the public of the United States for this commodity would aggregate about \$375,000,000 annually or over \$1,000,000 a day. These figures, according to the *Trade Record*, do not include enormous quantities of ice manufactured by certain great industries solely for their own use and not placed upon the markets or included in the Census reports. The production of ice by artificial methods began in New Orleans about the close of the Civil War and by 1870 the number of ice factories in the country could be counted upon the fingers of one hand. By 1890 the number had increased to 222, by 1910 to 2,004 and by 1922 to 2,867. Capital invested in ice factories increased from about \$1,000,000 in 1880, to \$38,000,000 in 1900, and to \$270,000,000 in 1919, the year covered by the latest census reports. Official figures showing the amount of natural ice harvested are not available, but unofficial estimates indicate a steady decrease in the output coincident with the big increase in manufactured ice. A decade ago practically no natural ice was used in the southern half of the United States because it was cheaper to manufacture ice than to transport natural ice from the ice-harvesting regions. Now even the northern States, where natural ice is to be had for the harvesting, are abandoning the natural product for the artificial. This is evidenced by the fact that the largest artificial ice-producing States are in the North—New York, Pennsylvania, Ohio and Illinois, while the Federal Census of 1920 shows ice factories in every State of the Union except Vermont and New Hampshire. It is estimated that about two-thirds of the 28,000,000 tons of ice manufactured in the United States in 1919 was made of distilled water. The disappearance of the item "ice" from the export records of the United States government, indicates that the production of ice by artificial methods has become general in other parts of the world. The exportation of ice from the United States to tropical and semi-tropical countries began in 1805, and although the original experiment was not a financial success, the exportation continued until the value of the ice

exported exceeded \$250,000 annually during the period immediately following the Civil War. Shipments then began to decline slowly as the production of artificial ice developed and, continuing to decline, in 1917 the item "ice" disappeared from the official records of "merchandise exported from the United States." Ice-making machines, however, have taken the place of ice in the list of articles exported from the United States, the total value of "refrigerating machinery, including ice-making machinery" exported from the United States during the fiscal year 1921 having aggregated \$3,391,000 as against a little over \$500,000 a decade earlier.

ICELAND, a sovereign state since 1918, united with Denmark solely through the crown. It is an island state with an area of 39,709 square miles and a population of 94,690 in 1920. About one-third of the population is urban. The foreign born element is small, being less than 1,000. The Evangelical Lutheran is the only religion endowed by the state but there is full toleration for all denominations. Elementary education is compulsory from the age of 10 to 14. There are 460 elementary schools with 6,920 pupils and some continuation schools. For higher education there is a university at the capital, Reykjavik. The budget in 1922 called for a revenue of \$2,031,785 and an expenditure of \$2,579,795. The public debt of the state amounts to \$4,052,150, incurred mostly for public works. The state has neither an army nor a navy, its permanent neutrality being established by the Act of Union of 1918. Hay, potatoes and turnips are the chief agricultural products. According to the latest figures there were 579,000 sheep, 23,500 cattle, 50,600 horses and 3,000 goats in the state. Fishing is the great industry of Iceland, the yearly catch being valued at \$6,000,000. Cod fishing comprises five-sixths of the industry. The external trade of the island aggregates \$20,000,000 approximately and is about equally divided between imports and exports. The island has about 300 miles of good roads and 240 post offices. There are no railways. The executive power is vested in the king who exercises it through ministers responsible to the legislature. The legislature is bicameral. The upper house has 14 members, six of whom are elected for a term of eight years by proportional representation for the whole country. Eight members are elected by the whole Althing or legislature out of the members elected by universal suffrage. The lower house has 28 members elected for four years by universal suffrage. The legislature meets every year on 15 February unless summoned by the king at an earlier date. Money bills must originate in the lower house, but all others may originate in either house. In case of disagreement between the houses a joint session takes place and final decision is rendered by a majority of two-thirds, except in the case of a budget bill when a simple majority suffices. The ministers may vote only in the house of which they are members but

are permitted free access to either house. The ministry is divided into three departments—Ministry of Justice and of Ecclesiastical Affairs and President of the Council, Ministry of Trade and Communications, and the Ministry of Finance. The president of the council in 1922 was Siggurdur Eggerz.

IDAHO, one of the mountain group of States, bounded on the north by British Columbia and Montana, east by Montana and Wyoming, south by Utah and Nevada, and west by Oregon and Washington. It has an area of 83,888 square miles, including 534 square miles under water. In 1920, it had a population of 431,866. The State ranks 12th in area and 43rd in population. The area of Indian reservations within the State is 85 square miles with a population of 4,048. Of the total population in 1920, 425,668 were whites, 920 were negroes, 2,180 were Asiatics and 3,098 were Indians. There were 38,963 foreign born residents in the State in 1920, including 4,451 English, 4,954 Canadian, 4,143 Germans, 5,112 Swedes, 2,482 Norwegians and 1,410 Irish. The urban population in 1920 was 27.6 of the total.

Religion.—The religious denominations of the State have an aggregate membership of 135,386, including 17,947 Roman Catholics, 11,373 Methodists, 6,943 Presbyterians, 5,682 Baptists, 2,827 Congregationalists and 2,404 Episcopalians. There are also large numbers of Mormons and Disciples, or Christians.

Education.—Primary education is free and compulsory. Public schools of the State are under the supervision of a State Board of Education. There are 1,716 primary schools with 4,350 teachers and 141,996 pupils; 214 high schools with 932 teachers and 14,840 pupils, and two normal schools with 54 teachers and 425 students. The total appropriation for primary education in 1922 was \$8,000,000. Higher education may be had at the Presbyterian College of Idaho and the State University of Idaho. In addition, there are an industrial training school and a school for the deaf and blind. There are also five denominational colleges within the State to which students are admitted regardless of their religious belief.

Finances.—At the beginning of the last biennium there was in hand in the State treasury a balance of \$705,187. During the biennium receipts from all sources aggregated \$18,461,455. Disbursements amounted to \$16,967,502 for the same period, leaving a balance on hand at the end of the two-year period of \$2,199,140. The bonded debt of the State in 1920 amounted to \$3,880,750 and the assessed value of real and personal property, the same year, aggregated \$377,865,027.

Agriculture.—Idaho is classed as one of the irrigation States, much of its surface being naturally arid, but exceedingly productive when irrigated. In recent years fruit growing has been greatly developed. Livestock raising is carried on on most of the plateaus which have not so far been brought under irrigation. There were in the State 42,106 farms in 1920 with an aggregate area of 8,375,873 acres, of which 4,511,680 acres were improved land. The value of all farm property the same year amounted

to \$716,137,910. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 52,000 acres, 1,976,000 bushels, \$1,561,000; spring wheat, 679,000 acres, 15,617,000 bushels, \$14,055,000; winter wheat, 444,000 acres, 8,658,000 bushels, \$7,792,000; barley, 85,000 acres, 2,890,000 bushels, \$1,878,000; clover seed, 16,000 acres, 72,000 bushels, \$698,000; oats, 162,000 acres, 6,156,000 bushels, \$2,832,000; rye, 11,000 acres, 165,000 bushels, \$111,000; tame hay, 1,029,000 acres, 2,572,000 tons, \$25,720,000; beans, 26,000 acres, 364,000 bushels, \$1,238,000; potatoes, 86,000 acres, 15,910,000 bushels, \$4,932,000; apples, 3,900,000 bushels; peaches, 244,000 bushels, and pears, 72,000 bushels. On 1 Jan. 1923, there were in the State 273,000 horses, valued at \$15,834,000; 8,000 mules, valued at \$520,000; 162,000 milk cows, valued at \$10,206,000; 542,000 other cattle, valued at \$14,526,000; 2,642,000 sheep, valued at \$21,929,000, and 235,000 swine, valued at \$2,702,000. The wool clip in 1920 totaled 21,702,000 pounds. Within the State there are 18,682,031 acres of national forest.

Mining and Other Products.—Idaho has rich deposits of gold, silver and other metals. About 7,000 persons are employed regularly in the mining industries. Some coal is mined, as also iron, nickel, cobalt, mica, phosphate rock, tungsten, granite, sandstone, limestone and salt. The value of the gold, silver, copper, lead and zinc produced from mines in Idaho in 1922 was \$18,399,000; in 1921 it was \$15,776,819. The production of zinc and copper increased, gold decreased, and silver and lead were nearly the same as in 1921. The increase in total value was due largely to the increase in the price of lead. In general mining conditions improved in 1922. The labor situation was better, metal prices were increasing, and freight rates were reduced. Production was retarded, however, by the idleness of the Hercules and Tamarack and Custer mines for about seven months. The mine output of gold in Idaho in 1922 was valued at \$490,000, as compared with \$545,731 in 1921. As in other recent years, a large part of the gold output in 1922 came from the Gold Hill and Iowa mine, at Quartzburg, and the dredge of the Yukon Gold Company, at Murray, but the output from both these properties decreased. The deficiency was made up in part by gold from the Idaho Metals mine, near Mackay, the Talache mine, in Bonner County, and the Independence mine, in Blaine County. The mine output of silver decreased slightly, from 6,080,528 ounces in 1921 to 5,998,000 ounces in 1922. The largest silver producers in the State were the Bunker Hill and Sullivan, at Kellogg, the Hecla mine, at Burke, and the Morning mine of the Federal Mining and Smelting Company. The Hercules mine, usually one of the largest producers of silver, was active only five months and the output from the Gold Hunter and Tamarack and Custer was less than the average. The mines of the Coeur d'Alene district produced 4,423,000 ounces of silver, or 74 per cent of the total for the State. The mine output of copper increased from 1,688,195 pounds in 1921 to 3,946,000 pounds in 1922. The value of the output increased from \$217,777 to \$529,000. The mine output of lead decreased from 198,469,119 pounds in 1921 to 195,300,000

pounds in 1922, but the average price of lead was about 5.7 cents a pound, and the value increased from \$8,931,110 to \$11,132,100. The Bunker Hill mine produced much more lead than any other mine in the State. The mine output of recoverable zinc increased to 4,400,000 pounds, valued at \$250,800, as a result of the higher price of zinc and reduced freight rate.

Manufacturing Industries.—The latest manufacturing census reported 922 industrial establishments in Idaho, capitalized at \$96,061,709, employing 16,248 persons, using raw materials to the value of \$43,948,505 during the census year, and turning out products valued at \$80,510,749 in the same period. The chief industries are lumber and timber, and flour and grist milling. There are 260 lumber mills in the State and 78 flour mills. The lumber comprises white and yellow pine, larch, white fir and cedar.

Communications.—There are within the State 2,884 miles of railroad and 102 miles of electric railways. Several trans-continental railway systems cross the State. There is water communication with the Pacific Ocean through the Celilo Canal. Lewiston is the chief port of Idaho, 480 miles distant from the Pacific.

Government.—The executive power is vested in a governor, who is elected for two years. The governor for the term 1921-23 was the Hon. D. W. Davis, who was succeeded in January 1923 by the Hon. Charles C. Moore. The legislative power is vested in a Senate of 44 members and a House of Representatives of 54 members; both senators and representatives are elected for terms of two years, and sessions of the legislature are held biennially. For administrative purposes the State is divided into 44 counties. The capital of the State is Boise, which in 1920 had a population of 21,393. Pocatello, the second city of the State had a population in 1920 of 14,961. Idaho sends two senators and two representatives to the Federal Congress.

IDAHO, College of, a Presbyterian educational institution, founded in 1891 and located at Caldwell, Idaho. In 1922-23 it had a faculty of 15 members, 350 students, property valued at \$400,000 and an income of \$50,000. William Judson Boone, D.D., is president.

IDAHO, University of, a State coeducational institution, founded in 1889 and located at Moscow, Idaho. In 1922-23 it had a faculty of 125 members, 1,650 students, property valued at \$1,500,000 and an income of \$750,000. Alfred H. Upham, Ph.D., is president.

IGLEHART, Ferdinand Cowle, American clergyman and author: b. Warrick County, Ind., 8 Dec. 1845; d. 21 July 1922. He was graduated at DePauw University in 1867, received the degree of A.M. in 1869 and the degree of D.D. in 1892. He was ordained to the Methodist Episcopal ministry in 1870, and was pastor successively at Sullivan, New Harmony, New Albany, Salem, Greencastle and Evansville, Ind., from 1870 to 1882; Bloomington, Ill., Buffalo, N. Y., Newark, N. J., New York, N. Y., Brooklyn, N. Y., Newburgh N. Y., Tarrytown, N. Y., and Peekskill, N. Y. from 1882 to 1905. He was well known as a prohibitionist, and was district superintendent of the New York Anti-Saloon League from 1906-15. He was the author of:

'The Speaking Oak' (1903); 'King Alcohol Dethroned' (1917); 'Theodore Roosevelt, the Man As I Knew Him' (1919); and was a contributor to many magazines. He also was on the editorial staff of the *Christian Herald*.

ILLINOIS, one of the east north-central States of the United States, bounded on the north by Wisconsin, east by Indiana, south by Kentucky and Missouri, and west by Missouri and Iowa. It has an area of 56,665 square miles and a population in 1920 of 6,485,280. It is 23d in rank as to size and third in rank as to population among the States of the Union. Of the population in 1920, whites numbered 6,299,233, negroes numbered 182,274, Asiatics numbered 3,479 and Indians numbered 194. In the same year there were within the State 1,206,951 foreign-born, of whom 205,491 were Germans, 105,577 Swedes, 74,274 Irish, 54,247 English, 46,457 Austrians, 45,233 Canadians, 34,437 Hungarians, 27,785 Norwegians, 117,899 Russians, 94,407 Italians, 19,598 natives of Scotland and 14,344 Dutchmen. In 1920, the urban population was 67.9 per cent of the total. The seat of the State government is at Springfield, which in 1920 had a population of 59,183. The largest city of the State and the second largest in the United States is Chicago, with a population in 1920 of 2,701,705. Other large cities of Illinois, with their populations, are: Peoria, 76,121; East Saint Louis, 66,746; Rockford, 65,651; Decatur, 43,818; Joliet, 38,372; Aurora, 36,265; Quincy, 35,978; Evanston, 37,215; Danville, 33,750; Bloomington, 28,638; Rock Island, 35,177; Moline, 30,709, and Oak Park Village, 39,830.

Religion.—The various religious denominations, having an aggregate membership of 2,522,373, include 1,171,381 Roman Catholics, 287,931 Methodists, 170,452 Baptists, 187,746 Lutherans, 114,857 Presbyterians, 57,926 Congregationalists, and 40,725 Episcopalians.

Education.—Primary education is free and compulsory for all children between the ages of seven and 14. There are in the State 11,921 primary schools with 30,381 teachers and 999,866 pupils; 838 high schools with 6,218 teachers and 127,694 pupils; five normal schools with 260 teachers and 11,539 students. The 1922 State appropriation for education was \$8,000,000. For higher education there are 29 colleges and universities in the State.

Charities and Corrections.—Illinois has 257 charitable institutions, hospitals, orphanages, homes and schools for the deaf and blind. Of these, 20 are supported by public funds, 117 by private endowment and 120 are supported by various religious denominations. There are 5,421 paupers in alms houses and 5,111 prisoners in State penal institutions.

Finances.—On 1 July 1921, the balance on hand at the State treasury amounted to \$26,553,409.51. Receipts during the fiscal year, 1921-22, amounted to \$57,084,996.80. Disbursements during the same fiscal year aggregated \$53,777,298.07, leaving a balance on 1 July 1922 of \$29,861,108.14. The estimated receipts from all sources for the fiscal year, 1922-23, were \$73,000,000, while various expenditures for the same period aggregated \$85,243,055. The total bonded debt of the State, as of 1 July 1922, amounted to \$11,017,500. The assessed value of

real property on the same date was \$2,346,828,550; of personal property, \$820,994,685.

Agriculture.—The surface of the State is almost uniformly level. At present, only 10 per cent of its area is wooded and no State, except Iowa, has so large a proportion of arable land. The last agricultural census showed that in 1920 there were 237,181 farms in the State with a total acreage of 31,974,775 acres, of which 27,294,533 acres were improved land. The value of all farm property in the same year was \$6,666,767,235. The value of land and buildings was \$5,997,993,566; implements and machinery were valued at \$222,619,605, and live stock was valued at \$446,154,064. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 8,819,000 acres, 313,074,000 bushels, \$187,844,000; spring wheat, 166,000 acres, 2,407,000 bushels, \$2,575,000; winter wheat, 3,030,000 acres, 53,025,000 bushels, \$56,737,000; barley, 190,000 acres, 5,605,000 bushels, \$3,251,000; clover seed, 210,000 acres, 315,000 bushels, \$3,024,000; oats, 3,860,000 acres, 110,010,000 bushels, \$42,904,000; buckwheat, 6,000 acres, 84,000 bushels, \$71,000; rye, 256,000 acres, 4,096,000 bushels, \$3,072,000; broom corn, 21,000 acres, 7,100 tons, \$1,846,000; tame hay, 3,645,000 acres, 5,285,000 tons, \$66,062,000; sorghum syrup, 9,000 acres, 648,000 gallons, \$609,000; potatoes, 119,000 acres, 7,497,000 bushels, \$6,747,000; sweet potatoes, 9,000 acres, 855,000 bushels, \$898,000; apples, 9,720,000 bushels; peaches, 1,100,000 bushels, and pears, 510,500 bushels. On 1 Jan. 1923, there were in the State 1,183,000 horses, valued at \$82,810,000; 170,000 mules, valued at \$13,090,000; 1,148,000 milk cows, valued at \$64,288,000; 1,561,000 other cattle, valued at \$53,074,000; 516,000 sheep, valued at \$4,076,000, and 4,693,000 swine, valued at \$58,662,000. The wool clip of the State in 1920 was 3,923,000 pounds.

Manufactures.—In spite of the huge value of the agricultural output of the State, manufactured products far exceed these in value. The census returns of 1920 gave the value of all manufactured products at this date as \$3,250,000,000. The industrial output is varied, including iron and steel, the great packing plants of Chicago, machinery, electrical supplies, agricultural implements, furniture, automobiles, railway cars, woodenware, flour, woolen and knit goods and a host of lesser industries. The manufacturing establishments of the State number over 19,000, having an aggregate capital of \$3,000,000,000, employ 800,000 persons and use raw materials to the value of over \$2,000,000,000 yearly.

Mining.—Illinois ranked fourth among the States in the value of its mineral products for the year 1919, and third in total number of persons engaged in mining industries. The gross value of the mineral products of the State for that year was \$178,673,065. The industries ranked according to value of products were coal mining, petroleum and natural gas production, limestone quarrying, fluorspar mining, sandstone quarrying, lead and zinc mining, clay mining, mining of abrasive materials and pyrite. The principal mining industry, coal, reported products valued at \$138,767,835. The coal producing area of the State is part of the Eastern Interior Coal Field, which extends into Indiana and Kentucky, and covers approximately 35,000 square miles in 48

counties in Illinois and furnishes bituminous coal chiefly for steam and domestic use. In 1921 the State's production of oil was 10,044,000 barrels as compared with 9,363,000 barrels in 1922. In 1922 Illinois produced 59,100,000 tons of coal, compared with 69,602,763 tons in 1921. In the last census year the capital invested in mining industries in the State aggregated \$231,836,571. In the same year, 84,309 persons were employed in the mining industries.

Communications.—Illinois is provided with a splendid net work of waterways, connecting the Mississippi, Ohio and Wabash. The Illinois River is the principal river within the State. The chief artificial waterway is the Chicago Drainage Canal, connecting Lake Michigan with the Illinois River. The canalization of the Illinois River to the Mississippi will eventually give Chicago water transport from the Great Lakes to the Gulf of Mexico. On the Great Lakes large fleets of steamers carry cereals, iron ore and other products between the Lake ports. There are 12,188 miles of railway in the State and 3,737 miles of electric railways. The railroad transport tonnage within the State is the heaviest in the United States and Chicago is the world's greatest railroad centre.

Government.—Executive power is vested in the governor, who is elected for a term of four years. The Legislature is composed of a Senate of 51 members, who are elected for four years; a House of Representatives of 153 members, elected for two years. The Legislature meets biennially in January of odd years. The State is divided into senatorial districts, from each of which one senator and three representatives are elected to the legislature. In the election of representatives, every voter has three votes, of which he may cast one for each of three candidates or one and one-half for each of two or all three for one. A State constitutional convention proposed a new State constitution, which was rejected by the voters on 12 Dec. 1922. The fight against the new constitution centred on the clause providing for a State income tax, and on other provisions seeking to limit Cook County's (Chicago) representation in the Legislature. For administrative purposes the State is divided into 102 counties, by far the most important of which is Cook County, in which is located the city of Chicago. Illinois sends two senators and 25 representatives to the Federal Congress.

Officials.—Governor, Len Small (term 1921–25); lieutenant-governor, Fred E. Sterling; secretary of state, Louis L. Emmerson; attorney-general, Edward J. Brundage; auditor, Andrew Russel; treasurer, Oscar Nelson; superintendent of education, Francis G. Blair.

Judiciary.—Members of Supreme Court: Floyd E. Thompson, James H. Cartwright, Warren W. Duncan, Orrin N. Carter, Frank K. Dunn, William M. Farmer and Clyde E. Stone.

ILLINOIS COLLEGE, a Presbyterian co-educational institution, founded in 1829 and located at Jacksonville, Ill. In 1922–23 it had a faculty of 27 members, 478 students, property valued at \$1,132,101 and an income of \$110,269. C. H. Rammelkamp, Ph.D., is president.

ILLINOIS, University of, a State co-educational institution, chartered in 1867 and lo-

cated at Urbana, Ill. In 1922-23 it had a faculty of 949 members, and property valued at \$10,362,710 (cost), with an estimated income of \$5,377,650. The student enrollment on 1 Nov. 1922 was 9,285. David Kinley, LL.D., is president.

ILLINOIS WOMAN'S COLLEGE, a Methodist Episcopal educational institution, founded in 1846 and located at Jacksonville, Ill. In 1922-23 it had a faculty of 35 members, 525 students, property valued at \$1,016,000 and an income of \$95,000. Joseph R. Harker, LL.D., is president.

IMMIGRATION. During the fiscal year ended 30 June 1922, immigrant arrivals numbered 309,556 and non-immigrant arrivals, 122,949, making a total of 432,505 alien arrivals in the United States. Departures for the same period totaled 345,384, including 198,712 emigrants and 146,672 non-emigrants, leaving an excess of immigration of 87,121, as compared with an excess of 552,132 in the fiscal year ended 30 June 1921. The races, or peoples, chiefly represented among the immigrant aliens admitted in 1922, were as follows: Italians, 41,154; English, 30,429; Hebrew, 53,524; Irish, 17,191; Scandinavian, 16,678; Scottish, 15,596; and Spanish, 1,879. The total number of aliens of all nationalities admitted from Canada and Mexico in 1922 was 66,361 as compared with 103,075 during the preceding fiscal year. In 1922 there was a small increase in the number of Chinese arrivals of the "immigrant" alien class, the total number admitted being 4,465 as compared with 4,017 in the fiscal year 1921. There was, however, a very large decrease among Chinese arrivals of the "non-immigrant" class, 8,755 having been admitted in 1922 as compared with 18,974 in the year previous. In addition to the numbers of Chinese aliens admitted to the United States the privilege of transit under bond was granted on behalf of 7,198 members of this race, mostly destined to Cuba, Mexico, South America or the West Indies. There was a further decrease in the admission of Japanese aliens to continental United States in 1922, the total number of such aliens admitted being 8,981, as compared with 12,868 in 1921. To Hawaii, 3,856 were admitted as compared with 3,599 in 1921.

The fiscal year 1922 was the first full year under the operation of the percentage limitation act of 19 May 1921, which went into operation 3 June 1921. Based upon drastically restrictive principles this act unquestionably served to cut down immigration to the United States during 1922. Section 2 of this act provides: "(a) That the number of aliens of any nationality who may be admitted under the immigration laws to the United States in any fiscal year shall be limited to 3 per centum of the number of foreign-born persons of such nationality resident in the United States as determined by the United States census of 1910." The act contains provisions granting exceptions from the 3 per cent rule above stated, and required one year's residence in countries contiguous to the territory of the United States in the case of aliens seeking admission from these countries. On 11 May 1922 the President approved the Joint Resolution of Congress, extending the operation of the act of 19 May 1921, to and including 30 June 1924, and making cer-

tain amendments and additions thereto. This measure increased from one to five years the period which an alien must reside in the Dominion of Canada, Newfoundland, Cuba, Mexico, Central and South America, or adjacent islands, in order to gain immunity from the operation of this special legislation. There was a slight decrease in the number of aliens deported from the United States for various causes. In 1922, 4,345 were deported as against 4,517 in 1921.

Toward the close of 1922 and in the early months of 1923 there was agitation for a constructive national immigration policy. Manufacturers in many States contended that the growing shortage of labor was interfering with necessary production. Those in favor of a liberal revision of the existing law base their contention on the fact that 32,728 laborers were admitted in 1922, while 100,058 laborers left the United States. On the other hand some members of Congress declared that the 3 per cent quota was too high and in the last session of the 67th Congress efforts were made to enact legislation restricting immigration to 2 per cent of the foreign-born nationals resident in the United States as determined by the census of 1890. The American Federation of Labor appeared even more anxious than Congress for further restrictive legislation. The number of immigrants from the principal countries allowed to enter the United States under the present 3 per cent law is as follows:

Albania, 288; Armenia, 230; Austria, 7,541; Belgium, 1,563; Bulgaria, 302; Czechoslovakia, 14,557; Danzig, 301; Denmark, 5,619; Finland, 3,921; Fiume, 71; France, 5,729; Germany, 67,607; Great Britain and Ireland, 77,342; Greece, 3,294; Hungary, 5,638; Iceland, 75; Italy, 42,057; Luxemburg, 92; Memel, 150; Netherlands, 3,607; Norway, 12,202; Poland, 21,076; Eastern Galicia, 5,786; Pinsk, 4,284; Portugal, 2,465; Rumania, 7,419; Bessarabian Region, 2,792; Russia, 21,613; Esthonian Region, 1,348; Latvian Region, 1,540; Lithuanian Region, 2,310; Spain, 912; Turkey, 2,388; Sweden, 20,042; Switzerland, 3,752; Yugoslavia, 6,426; Other Europe, 86; Palestine, 57; Syria, 928; Other Asia, 81; Africa, 122; Atlantic Islands, 121; Australia, 279; New Zealand and Pacific Island, 80; totals, 358,023.

IMPORTS AND EXPORTS. See under UNITED STATES, COMMERCE, FOREIGN; WORLD INTERNATIONAL TRADE.

INCOME TAX, Federal. Though most of its important provisions did not become effective until 1922, the Federal Income Tax Law in force in 1923 was passed in 1921. This law materially reduced the surtaxes imposed by its predecessor and abolished excess profits taxes on corporations. Under it, as under the preceding laws, every citizen of the United States, wherever resident, is subject to the payment of an income tax, no matter what the source of his income may be. Aliens resident in the United States are taxed as citizens; non-resident aliens are taxed only upon such parts of their incomes as may be derived from sources within the United States. The normal tax on incomes of individuals is 4 per cent on the first \$4,000 of taxable income and 8 per cent on the remainder. Surtax rates are, as follows: From

\$6,000 to \$10,000, 1 per cent; from \$10,000 to \$12,000, 2 per cent; upon every \$2,000 additional up to \$20,000 the rate increases 1 per cent; between \$20,000 and \$22,000 the rate is 8 per cent, omitting the 7 per cent rate; upon every \$2,000 additional up to \$32,000 the rate increases 1 per cent; between \$32,000 and \$36,000 the rate is 15 per cent, omitting the 14 per cent rate; upon every \$2,000 additional up to \$100,000 the rate increases 1 per cent, the rate between \$98,000 and \$100,000 being 47 per cent; from \$100,000 to \$150,000 the rate is 48 per cent; from \$150,000 to \$200,000, 49 per cent; over \$200,000, 50 per cent. Under the preceding law surtaxes were imposed on net incomes in excess of \$5,000 running from 1 per cent on the first \$1,000 or fraction thereof up to 65 per cent upon incomes in excess of \$1,000,000.

Individuals are taxed upon net income, derived by deducting from the gross income such deductions as allowed by the law. Gross income includes gains, profits, sums received as salaries, wages or compensation for personal services, or the income from a profession, vocation, trade or business, also rents, dividends and interests. Deductions allowed include all necessary expenses paid or incurred during the taxable year in carrying on a business, trade or profession. Interest paid during the year and also taxes, other than Federal income taxes, are deductible. Assessments for local benefits are not deductible. Certain losses also are deductible provided they are incurred in the trade or business of the taxpayer or sustained in any transaction entered into for profit. Losses sustained during the year as a result of fire, storm, shipwreck, theft, etc., are deductible unless the taxpayer is fully compensated by insurance or otherwise. A taxpayer also is entitled to deduct worthless debts due him which have been charged off. The act of 1921 contains a new provision in regard to bad debts in that it allows the taxpayer to deduct a bad debt in part if he is convinced that it is in part worthless. Deductions for depreciation also are allowable, but the subject is full of complexities. Contributions to corporations or philanthropic organizations established or operated exclusively for religious, charitable or educational purposes are deductible but must not exceed 15 per cent of the net income as computed without the benefit of such deductions. After a taxpayer has determined the amount of his net income subject to taxation by deducting from his gross income such deductions as the law allows, he is, for the purpose of computing the normal tax, entitled to certain other deductions by way of credits for dependents and personal exemption. In the case of a single person or a married person not living with husband or wife, the personal exemption is \$1,000. A married person, living with husband or wife, or the head of a family is entitled to a personal exemption of \$2,500 where the net income does not exceed \$5,000, or \$2,000 where the net income is in excess of \$5,000. Further, a taxpayer is entitled to a credit of \$400 for each and every dependent receiving his chief support from such taxpayer provided such dependent is under 18 years of age or is incapable of self-support because of mental or physical infirmities. Dividends of domestic corporations are not subject to the normal tax but are subject to the surtax.

Interest on Liberty Bonds, if taxable at all, is subject only to the surtax.

The law provides that every individual having a gross income for the taxable year of \$5,000 or more, regardless of the amount of net income, must make a return; every single individual having a net income of \$1,000 or over must make a return; every married person having a net income of \$2,000 or more must make a return even though, after deductions, the net income may not be subject to taxation. Husband and wife living together have the privilege of filing either a joint return or separate return.

Every fiduciary agent should make a return for the estate or trust for which he acts, stating specifically the items of gross income and deductions and credits allowed by the law, if net income is \$1,000 or gross income \$5,000.

All partnerships must make returns of information no matter what the net income of the firm may be. These returns are not taxable but are information returns, each partner showing on his individual return his proportionate share of the proceeds of the partnership.

All corporations, except those especially exempt from taxation, must file income tax returns regardless of income received during the taxable period. Corporations are now taxed on a flat rate of 12½ per cent. A corporation having a net income of \$25,000 or less is entitled to a credit of \$2,000. There are certain classes of corporations especially exempt under the law from payment of income tax, such as labor organizations, fraternal societies, domestic building and loan associations and any community fund or foundation organized and operated exclusively for religious, charitable and scientific purposes, business leagues and chambers of commerce, clubs operated exclusively for pleasure, recreation, etc. These corporations, to secure exemption, must file with the Collector of Internal Revenue a statement showing their purposes and claiming exemption.

The net income and gross income of corporations, generally speaking, are determined in a manner similar to that applied to individuals.

Dividends received by individuals are subject to surtax when paid out of the earnings or profits accumulated by corporations subsequent to 28 Feb. 1913.

All income tax returns must be filed with the Collector of Internal Revenue before the close of business on 15 March of each year with exception of withholding returns due 1 March.

Income and profits tax collections during the fiscal year 1922 totaled \$2,086,918,464.85 as compared with \$3,228,137,673.75 in 1921. Personal income tax returns filed as of the calendar year 1920 (latest available figures) numbered 7,259,944. The total amount of income reported was \$23,735,629,183, and the tax (normal and surtax) amounted to \$1,075,053,686. The income tax yield by years for the eight years—1913 to 1920—was as follows: \$28,253,535; \$41,046,162; \$67,943,595; \$173,386,694; \$691,492,954; \$1,127,721,835; \$1,269,630,104; \$1,075,053,686.

During the year and also in 1923 Secretary Mellon of the Treasury recommended a reduction in surtax rates to a maximum of 25 per cent and also recommended that a ban be placed upon tax-exempt securities. An amendment to the law of 1921 prohibits the exchange free from

tax of bonds, notes, stocks, etc. Another amendment gives non-resident aliens, living in a contiguous country, for example Canada, the benefit of the 4 per cent rate of normal tax on the first \$4,000 of net income in excess of a personal exemption of \$1,000. Prior to the enactment of this amendment, the entire net income of every non-resident alien from sources within the United States, in excess of \$1,000 personal exemption, was subject to a normal tax rate of 8 per cent. The same amendment allows non-resident aliens the benefit of the \$400 exemption for each dependent.

INDIA, British, all that part of the Peninsula of Hindustan which is either directly or indirectly under British rule and also commonly applied to those states of the peninsula whose relations with India are the concern of the government. It does not include the native states in which British law is not in force. Since 1876 the king of Great Britain and Ireland has also the title of emperor of India.

Area and Population.—The extent of British Indian territory in 1921 was 1,093,074 square miles with a population of 247,140,000. The table following gives the area and population of the several British provinces and also of the states or agencies in political relations with the British Indian government:

BRITISH PROVINCES	Area, square miles	Population, 1921
Ajmer-Merwara.....	2,711	495,899
Andamans and Nicobars.....	3,143	26,833
Assam.....	53,015	7,598,861
Baluchistan.....	54,228	421,679
Bengal.....	78,699	46,653,177
Bihar and Orissa.....	83,181	33,998,778
Bombay Presidency.....	123,059	19,338,586
Burma.....	230,839	13,205,564
Central Provinces.....	99,823	13,908,514
Coorg.....	1,582	164,459
Delhi.....	557	486,741
Madras.....	142,330	42,322,270
Northwest Frontier Province.....	13,418	2,247,696
Punjab.....	99,222	20,678,393
United Provinces.....	107,267	45,590,946
Total (British Provinces).....	1,093,074	247,138,396
States and agencies:		
Assam State.....	8,456	383,672
Baluchistan States.....	80,410	378,999
Baroda State.....	8,182	2,121,875
Bengal States.....	5,393	896,173
Bihar and Orissa States.....	28,648	3,965,431
Bombay States.....	63,864	7,412,341
Central India Agency.....	52,260	6,004,581
Central Provinces States.....	31,174	2,068,482
Gwalior State.....	25,107	3,175,822
Hyderabad State.....	82,698	12,453,627
Kashmir State.....	84,432	3,322,030
Madras States.....	10,549	5,460,029
Mysore State.....	29,475	5,976,660
Northwest Frontier Province		
Agency and Tribal areas.....	25,472	2,828,055
Punjab States.....	36,551	4,415,401
Rajputana Agency.....	128,987	9,857,012
Sikh State.....	2,818	81,722
United Provinces States.....	5,079	1,134,824
Total (States and Agencies).....	709,555	71,936,736
Grand total.....	1,802,629	319,075,132

Of the population, 82,000,000 speak Hindi; over 48,000,000 speak Bengali; 23,000,000 speak

Telugu; 20,000,000 speak Marathi; 18,000,000 speak Tamil; 16,000,000 speak Punjabi; 14,000,000 each speak Rajasthani and Western Hindi; 10,000,000 each speak Gujarati, Kanarese and Oriya; 8,000,000 speak Burmese; 7,000,000 speak Malayalam; while over 1,000,000 speak Sindhi, Santali, Pashto, Assamese, Gond, Kashmiri and Karen. English is spoken by 303,515. The British born population is about 120,000. The population may further be divided according to occupations, which shows 225,000,000 engaged in agriculture and pastoral pursuits, 35,000,000 in industry, 18,000,000 in trade, 5,000,000 in the professions and liberal arts, and 5,000,000 in the various services of transportation, 4,000,000 in domestic service. Of those connected with industries, 8,000,000 are engaged in the making of textiles, 7,750,000 in making dress and toilet articles, 4,000,000 in wood and lumber industries, 4,000,000 in the food industries, 2,000,000 in ceramics, 2,000,000 in the building trades, 2,000,000 in the metal trades, and 1,250,000 in the tanning trade. Delhi, the capital of India, has a population of 303,148. Calcutta, however, is the largest city with 1,263,292 and Bombay the second city with 1,172,953 inhabitants. Other large cities are: Madras, 522,951; Hyderabad, 404,225; Rangoon, 339,527; Lahore, 279,558; Ahmedabad, 274,202; Lucknow, 243,553; Bangalore, 238,111; Karachi, 215,781; and Cawnpore, 213,044. There are 18 cities with from 100,000 to 200,000 and 45 cities with from 50,000 to 100,000 inhabitants.

Religion.—There are 217,000,000 of Hindus, 11,000,000 Buddhists, 66,000,000 Mohammedans, 10,000,000 Animists, 3,000,000 Sikhs, 3,876,203 Christians and 1,248,182 Jains. Of the Christians, the Roman Catholics are the most numerous with 1,490,863 communicants, followed by the Anglicans with 492,752.

Education.—Of the total population about 20,000,000 are able to read and write, or less than 7 per cent of the population. There are in India 168,358 public institutions of education with 7,612,839 pupils and 34,623 private institutions with 593,386 pupils, 3,784 special schools with 131,592 students, 7,927 secondary schools with 1,264,819 students, and 216 colleges with 65,916 students. There are universities at Calcutta, Madras, Bombay, Allahabad, Punjab, Patna, Benares, Mysore and Aligarh. Calcutta had 17,409 matriculated students in 1920, the Punjab, 6,595 and Patna, 4,178.

Production.—Agriculture is the chief occupation of the people, about 225,000,000 of the population being engaged in it and in allied industries. In 1921, there were planted 78,000,000 acres of rice, the yield from which was 28,033,000 tons, 26,000,000 acres of wheat which yielded 6,709,000 tons, 21,000,000 acres of cotton which yielded 3,556,000 bales, 2,250,000 acres of flax which yielded 269,000 tons, 4,912,000 acres of rape and mustard which yielded 848,000 tons, 4,291,000 acres of sesamum which yielded 368,000 tons, 1,951,000 acres of ground nuts which yielded 931,000 tons, 2,509,000 acres of jute which yielded 5,915,000 bales, 2,553,000 acres of sugarcane which yielded 2,465,000 tons, 701,000 acres of tea which yielded 345,340,000 pounds, and 238,000 acres of indigo which yielded 40,000 hundredweight of dye. Nearly 30,000,000 acres are under irrigation,

or about 12 per cent of the entire cropped area. There are 250,949 square miles of reserved, protected and unclassified forest land. The wheat crop of 1922 was 3,000,000 tons above that of the year previous. Rice was 19 per cent higher, totaling 33,038,000 tons, the production of sugarcane, linseed and rape also showed a marked improvement but the groundnut crop showed a decline of 10 per cent, the production being 920,000 tons. The yield of indigo was 61,000 hundred-weight in 1922, or 48 per cent above the previous year. The total production of cotton in 1922 was 4,463,000 bales. The jute crop declined as did the crop of tea and rubber. After agriculture the most important native industry is the weaving of cotton textiles. There are 284 establishments engaged in cotton spinning and weaving which furnish employment to 282,297 persons. There are nearly 8,000,000 spindles and the looms number 118,434. The production of yarn in 1921 was 660,042,597 pounds and of cloth 367,481,791 pounds. In 1922 there were in British India, 4,827 establishments, employing 50 persons or over each, with 1,238,410 employees. Aside from the textile and ginning industries there are 542 rice mills, 334 tanneries, 182 tile and brick factories, 138 oil mills, 161 engineering workshops, 148 printing establishments, 127 saw mills, and 125 jute presses. There are 3,668 joint stock companies incorporated in India. In 1920 the quantity of coal produced was 17,962,214 tons. The average number of persons working in and about mines regulated by the Indian Mines act was 249,156. Manganese ore was produced to the extent of 537,995 tons, copper, 32,759 tons; gold 507,261 ounces; wolfram 3,577 tons and rubies 158,577 carats. The total value of the minerals produced in 1919 was 21,850,912 pounds sterling.

Commerce.—The following table shows the trend of India's trade in principal commodities for 1921 and 1922:

ARTICLES	CALENDAR YEAR —	
	1921	1922
IMPORTS		
Motor vehicles:		
Motor cars, number.....	4,612	4,201
Motor cycles, number.....	1,248	784
Motor trucks, number.....	921	694
Machinery, textile, rupees.....	95,353,600	116,681,600
Iron and steel:		
Bars and channels, tons.....	137,400	185,714
Beams, pillars, etc., tons.....	61,200	66,515
Tubes and fittings, tons.....	68,300	53,836
Cotton goods:		
Gray, yards.....	659,248,000	770,252,100
White, yards.....	291,836,000	306,914,400
Colored, yards.....	196,573,000	199,843,500
EXPORTS		
Cotton, raw, tons.....	367,981	514,989
Hides, tons.....	22,660	21,606
Jute:		
Raw, tons.....	426,783	632,759
Manufactured, tons.....	647,103	658,181
Skins, tons.....	17,993	19,434
Wheat, tons.....	187,424	107,432

1 All 1922 figures are subject to revision.

The following table shows the shares of the various countries in the import and export trade of India for the first seven months (April to October) of the fiscal years 1921 and 1922:

COUNTRIES OF ORIGIN AND DESTINATION	VALUE	
	1921	1922
IMPORTS INTO INDIA		
	<i>Rupees</i>	<i>Rupees</i>
Great Britain.....	821,641,000	806,833,000
British possessions.....	107,596,000	96,702,000
Germany.....	34,261,000	71,801,000
United States.....	143,973,000	82,652,000
Japan.....	88,204,000	77,016,000
Other countries.....	280,983,000	198,905,000
Total.....	1,476,658,000	1,333,909,000
EXPORTS FROM INDIA		
Great Britain.....	225,753,000	311,161,000
British possessions.....	284,455,000	320,854,000
Germany.....	78,846,000	122,621,000
United States.....	135,446,000	168,285,000
Japan.....	187,716,000	182,559,000
Other countries.....	309,195,000	446,904,000
Total.....	1,221,411,000	1,552,384,000

Imports from the United States consisted principally of mineral oils, machinery and mill work, iron and steel, hardware, scientific instruments and apparatus, and motor cars. Although there was a decrease in Indian trade with the United States in 1922, American manufacturers are active in India and the feeling exists that, with the revival of business and the establishment of Germany's financial position, the United States will more than maintain the position gained during and since the war. The chief imports are cotton manufactures, metals and ores, machinery and mill work, and sugar. The chief exports are jute both raw and manufactured, raw cotton, manufactured cotton, rice, seeds, tea, wheat and wheat flour, wool, opium, oils, coffee, oil cakes, fertilizers, wood, coal, bran and pollards and sugar and confectionery. Calcutta, Bombay, Rangoon, Madras, Karachi and Tuticorin handle most of the foreign trade about one-half passing through the two first named.

Communications.—In India in 1922 there were 37,029 miles of railways open to traffic, of these 7,552 miles were operated by the state, 19,100 miles were state lines operated by companies, 2,208 miles were branch line companies' lines under guarantee and rebate terms, 2,306 miles were companies' lines subsidised by the central or local governments, 2,626 miles were Indian State lines worked by the states, 1,768 miles were Indian State lines operated by the main line, 760 miles of line were companies' line guaranteed by the Indian states, 308 miles were companies' lines subsidised by district boards, 237 miles were district board lines, 90 miles were unassisted companies' lines and 74 miles were in foreign territory but operated by the British Indian railway companies. There are 18,195 miles of so-called standard gauge of 5 feet 6 inches; 15,248 miles of metre gauge (3 feet 3¼ inches) and 3,586 miles of the special gauges of 2 feet 6 inches and 2 feet. There are 56,000

miles of metalled roads maintained by the public authorities and 147,000 miles of unmetalled roads so maintained. Many of the irrigation canals are used for navigation by light draught vessels. There are in India 69,494 post offices, 88,417 miles of telegraph lines and 10,440 telegraph offices. There are 13 telephone exchanges with 17,810 connections privately owned and 245 exchanges with 8,975 connections established by the Post and Telegraph Department.

Finance.—In 1920-21, the Imperial revenue amounted to £86,857,000, the provincial revenue to £39,520,000, revenue raised in England £9,193,000, making a grand total of £135,570,000. Imperial revenue is that retained by the government in India for its own purposes and for defraying the expenditures of the Secretary of State for India in England. Provincial revenue is that assigned to the local government. The former is derived from land revenue, salt, excise, opium, income tax, railways and posts, irrigation, the mints, tributes, etc. Provincial revenue is derived from the civil departments, irrigation, registration, forests, and certain land revenues. In the budget for 1922-23 revenues were estimated at 1,332,300,000 rupees and expenditures at 1,423,900,000 rupees, thus contemplating a deficit of 91,600,000 rupees. On 31 March 1923 the national debt was estimated at 7,810,000,000 rupees, as against 4,110,000,000 rupees on 31 March 1914.

Government.—The movement for reform in India may be said to date from the year 1905, when Earl Curzon, then Viceroy, proposed that the province of Bengal be partitioned. This measure was fiercely resisted and the agitation, so aroused, soon broadened into a general demand for parliamentary institutions. In 1907, for the first time, two Indians were appointed by Viscount Morley to the Council of India in London. This was an initial step only but it created a deep sensation. India was at that time governed by a bureaucracy of officials, of whom the more responsible were British. She had no representative system, save the legislative councils in her provinces, which were nominated. These councils had been set up by an Act dated 1892. The Empire of India consists of (1) the directly governed provinces, with a population of about 240,000,000; and (2) the native states, each of which has its own prince or chief, with a total population of about 80,000,000. There are about 700 "states" of which 70 are of a considerable extent. It is to the provinces that the following narrative, in the main, applies. Under the unreformed system, the provinces were governed by the Viceroy and Governor General, sitting in Calcutta, with a Council, wholly nominated. Each province had a governor, a lieutenant-governor or administrator of lower rank. The hierarchy of officials was highly centralized. In 1909, Viscount Morley, then Secretary for India in London secured passage for the Indian councils Act. The measure was cautiously framed. It provided the provincial governors with an executive council or cabinet of four ministers, which councils hitherto had only been authorized for Bombay and Madras and there only consisted of two ministers. It also admitted elected members to the legislative councils, established by the act of 1892, and gave these councils the right to discuss finance. These concessions were

with difficulty passed through the House of Lords, yet it was clear that they did not begin to satisfy advanced opinion among the intellectuals of India. In 1911 King George held a Coronation Durbar at Delhi. He there announced that this city—the ancient seat of the Mogul empire—would be substituted for Calcutta as capital of India. The change may be compared with the transference of power from Petrograd in Russia to the more central and historic Moscow. On 20 Aug. 1917, E. S. Montagu, Secretary of State for India announced to the British House of Commons that he had been authorized to proceed himself to India, there to discuss a far wider scheme of self-government than any contemplated prior to that date. On 22 April 1918, the so-called Montagu-Chelmsford report was issued. It was signed by the Secretary of State and by Lord Chelmsford, then Viceroy. Based on its recommendations stands the constitution of India, as now developed.

At the head of affairs, there is still the Viceroy and Governor-General (now the Earl of Reading, appointed in 1921), whose term of office is usually five years. While the Secretary of State for India is still constitutionally responsible to the British Parliament and Cabinet for the government of the dependency, the actual control is passing more and more every year to the authorities within India herself. The ruling princes of the native states have been organized into a Council of Princes which meets at Delhi for the consideration of matters affecting those territories. At Delhi, there has been established also a parliament, with two chambers. The Upper House or Council of State consists of not more than 60 members of whom not more than 20 may be officials. This Council of State corresponds to the senate or second chamber in the self-governing Dominions. The life of the Council is five years. The Lower House, or Legislative Assembly, consists of 144 members of whom 41 are nominated and 103 elected by popular vote. Of the nominated members, 26 are officials. The normal life of the Legislative Assembly is three years and this period may be lengthened or shortened by the Governor-General at his discretion, should a special reason arise. In the event of differences between the two chambers, there is a provision for joint sittings. The first president or speaker of the Legislative Assembly has been Alexander F. Whyte, formerly member of the British House of Commons and son of Principal Whyte, the famous Scottish divine. The procedure in the Parliament at Delhi is based upon precedents established at Westminster and the official reports appear in similar volumes. The language used is English which has become the most convenient medium amid the numerous languages and dialects spoken by the various Indian races. The Governor-General's Executive Council or Cabinet has a varying number of ministers—eight is usual; there are 11 departments—home, foreign and political, finance, army, public works, revenue and agriculture, commerce, legislative, education and health, railways and the board of industries. While it cannot be suggested that this constitution is as democratic as that of the United States or of Great Britain and her self-governing Dominions, the scheme represents an enormous advance beyond anything previously suggested for a great Orien-

tal country. The reforms include a far-reaching devolution of powers from the central government to the provinces. Eight legislatures have been created, with members as follows: Madras 118, Bombay 111, Bengal 125, United Provinces 118, Punjab 83, Bihar and Orissa 98, Central Provinces 70 and Assam 53. In these legislatures, not more than 20 per cent of the members may be officials, while 70 per cent must be elected. A small minority are nominated and non-official. The normal term is three years. The principle underlying the constitution has come to be called "dyarchy." Broadly, it means that certain subjects are "transferred" to the control of the legislatures while other subjects are "reserved" in the control of the officials. The transferred subjects include, with reservations, local self-government, medical administration, public health and sanitation, education, public works, agriculture, fisheries, co-operative societies, excise, registration, development of industries, adulteration, and religious and charitable endowments. By the scheme of reforms, further subjects can be "transferred" from time to time and so brought under popular control. The new constitution has worked with a fair success. The non-co-operators, led by Gandhi, boycotted the elections to the new legislatures and only 200,000 votes were recorded for the parliament at Delhi. The debates, however, have been well conducted and valuable. As a proof of the extent to which Indians themselves are governing their own country, a return may be quoted, of date 1913, which shows that the total number of British officials in India was then only 1,517, or about one official to every 200,000 of population.

PHILIP WHITWELL WILSON.

History.—The year opened with the Prince of Wales on tour throughout India. In many places the day of his arrival was signalized by the proclamation of a *Hartal*, the Indian equivalent of a general strike, fomented by the Gandhi party of non-co-operation. Arrests and rioting continued on an increasing scale in several parts, the most serious being the storming of a police post at Chauri on 4 February in which 17 officials were slain. The report of the Moplah insurrection was made public on 24 January, when the extent of that movement was realized for the first time. It showed that 2,266 Moplahs were killed, 1,625 were wounded, 5,688 were captured during the fighting and 38,256 surrendered at the close. The civil disobedience movement against British rule was halted by the passage of a resolution by the Executive Committee of the National Congress at Bardoli on 14 February at which Gandhi, the apostle of the movement, was present. The civil disobedience program was suspended until the atmosphere would be so non-violent as to insure a non-repetition of the atrocities at Garakpur and other places. Hostility to British agents increased over large areas in the United Provinces and in Behar. On 10 March the active participation of Gandhi in the movement was brought to a close by his arrest charged with sedition. Thereafter a sullen quiet settled over India and the struggle entered on a new phase. The threatening political outlook was reflected in the budget statement laid before the Legislative Assembly at Delhi on 2 March. It disclosed a deficit of ₹22,000,000. The tour of the Prince of Wales ended on 17 March.

Opinions differed as to the value of his much-advertised journey; some holding that in making England see and think he had performed a valuable public service, others holding that the trip was ill-timed and therefore was bad policy and further that the very democratic affability of the prince stamped him as a modern type of monarch and therefore one without a future in India where democracy in a prince or monarch stamps him as weak. On 18 March it was announced that Gandhi had been sentenced to six years imprisonment for sedition. There was no disorder among the people as the news spread but the general unrest continued unabated. Numerous districts of the Punjab were raided by the police in March and several seizures of arms made. The British Indian government, under Lord Reading, urged the adoption of that part of the Indian Nationalist demands which dealt with the Caliphate question. This meant a full restoration to the Turks of the cities of Constantinople, and Adrianople and the districts of Anatolia and Thrace and the freedom of the Sultan as head of the Moslem world as Caliph of Islam. The recommendation of Lord Reading was merely a repetition of the old policy of "Divide and rule." It was intended to separate the Mohammedans from the Hindus and thereby deal a death blow to the Indian demand for Swaraj (self-determination). The publication of the dispatch led to the forced resignation of Mr. Montague from the British Cabinet and the arrest of Gandhi followed immediately. A speech by the British Premier, Lloyd George, in which he was understood to say that the measures of self-government granted to India were largely experimental gave the incentive to further unrest. At mass meetings throughout India it was asserted that the Premier's speech proved that the reforms in the British Indian government in 1919 were not intended to be otherwise than transient, a mere sop to political expediency. Lord Reading hastened to assure the Indian public that the speech of the Premier did not mean the abandonment of the present British-Indian policy but the damage was done and the result appeared to be the uniting of all Indian factions. The phase of the passive resistance concerning the non-payment of taxes was taken up avidly by the peasants in Madras, Bengal and the United Provinces and soon all forms of debtor obligations were included — no rents, no payment of loans, etc. Bolshevik intrigue was also manifested in the offer of a special news service to the Indian press at nominal subscription rates from Moscow. The Sikh disturbances caused the government further uneasiness. In August disturbances broke out at Guru Ka Bagh near Amritsar. This movement was caused by disputes over the ownership and custody of the Sikh shrines. The government sought to protect the lawful native owners from the Akalis or fanatics and found itself compelled to take drastic measures to stem the enthusiasm for a holy war. The actual hostilities were incited by a woman on 26 August, who said: "The English may arrest you or shoot you, but do not be disheartened. Thirty-three crores (330,000,000) of humans need not be afraid of 400 bugs. Our brethren do not fear jails or bullets, and they are martyrs if they die by bullets, and soldiers of God if they are spared. Be men; break the bonds; and prepare for the

jails and to receive bullets. I am prepared to go to jail and be shot. Be men." After this exhortation the Akalis advanced on Guru Ka Bagh armed with staves. A battle was fought on 2 September and the British police withdrew within the fencing surrounding the Shrine estates. The affairs in the Near East had a profound repercussion in India. On 18 September the mosques in Bombay were crowded by throngs who offered prayer and thanksgiving for the victories of their Turkish co-religionists in Asia Minor. Processions were held in honor of Kemal Pasha. At a meeting at Ahmedabad on 27 September resolutions were passed protesting at the British attitude toward the Turks and especially against her sending forces to Constantinople. Threats were made to aid the Turks by joining them on the battlefield, if war should be declared against Turkey. The autumn session of the Legislative Assembly adjourned after a listless session in which little was accomplished. The session appeared to take umbrage at the speech of the British Premier on the future of the Indian services. The members held that these services should be Indianized as soon as possible. It was also the general opinion of the Assembly that the Central Indian Government should have effective control over the army, railways, telegraphs and customs, leaving purely local affairs to the provincial governments. The Indian Government was urged to undertake at once the construction of the Sukkur barrage irrigation project. This work, as planned, is one of the greatest irrigation schemes in the world, is to cost \$96,000,000 and will render possible the raising of crops to the value of \$15,000,000 yearly. The Central government sent Mr. Sastry as special envoy to discuss with the Dominion governments of Australia, Canada and New Zealand the question of giving rights of citizenship to Indians lawfully resident in the Dominions. The envoy reported that he had laid a satisfactory basis for a better understanding between the Government of India and the Dominions. The tribe Jelal Khel Mahsuds refused submission to the government and on 13 November made a serious raid near the northwest frontier killing the driver of a large convoy and capturing six persons. Two days later a battle took place near Jandola between these tribesmen and government troops in which the latter lost seven killed and an equal number of wounded. As the year closed the native unrest appeared less tense but the great lull was by no means reassuring. The Sikh dissatisfaction was alleviated by the purchase of the Shrine estates by capitalists who guaranteed free entrance to the Sikhs. The non-co-operators appeared determined to enter the legislative councils and to wreck all reforms by obstruction. Good crops made for a better outlook. At the close of the year it was officially reported that during the year 19,396 persons died from snake bite, 1,454 were killed by tigers, 560 by leopards, 556 by wolves, 69 by bears, 70 by elephants and 10 by hyenas. During the year 25,000 wild animals were killed and 5,700 snakes and 200,000 rupees were paid in bounties for the destruction of these pests.

INDIAN AFFAIRS. Conditions among the American Indians for the year 1922 show important gains in population, education and in-

dustrial activities. At the close of June the number of Indians in the United States, exclusive of Alaska, was 340,917, an increase for the last decade of 13,500 and the largest number recorded under the more accurate counts of recent years. The population by States was as follows:

Alabama.....	405
Arizona.....	43,327
Arkansas.....	106
California.....	11,091
Colorado.....	779
Connecticut.....	159
Delaware.....	2
District of Columbia.....	37
Florida.....	462
Georgia.....	125
Idaho.....	4,053
Illinois.....	194
Indiana.....	125
Iowa.....	352
Kansas.....	1,496
Kentucky.....	57
Louisiana.....	1,066
Maine.....	839
Maryland.....	32
Massachusetts.....	550
Michigan.....	7,628
Minnesota.....	13,326
Mississippi.....	1,297
Missouri.....	171
Montana.....	12,648
Nebraska.....	2,526
Nevada.....	10,952
New Hampshire.....	44
New Jersey.....	99
New Mexico.....	21,569
New York.....	6,078
North Carolina.....	11,853
North Dakota.....	9,466
Ohio.....	152
Oklahoma.....	119,158
Oregon.....	6,677
Pennsylvania.....	358
Rhode Island.....	106
South Carolina.....	304
South Dakota.....	23,448
Tennessee.....	56
Texas.....	2,110
Utah.....	1,580
Vermont.....	24
Virginia.....	822
Washington.....	10,920
West Virginia.....	7
Wisconsin.....	10,498
Wyoming.....	1,783

Under a thorough system of field supervision, every government Indian school was visited once or oftener and inspection made of many mission and public schools enrolling Indian children. Special efforts at the opening of the year resulted in filling government boarding schools beyond their normal capacity and an average attendance in all schools of 3,000 above any previous record. A revision and extension of the course of study requiring semi-annual examinations was made. The teaching personnel was more permanently organized and its efficiency improved. The attendance in public schools by payment of tuition for the children of non-tax-paying Indians was greatly increased and now promises, in addition to government facilities, to meet the educational needs of the Indians in most of the States. Insufficient school privileges still exist, however, in the Southwest, particularly in the large Navajo reservations where Federal provision for approximately 10,000 children is urgent, and the enlargement of boarding schools and the construction of new ones will be made as rapidly as possible. The military post of Fort Apache, Ariz., has been secured for school purposes and it is expected to

make it available for the education of 500 or more pupils.

The Indian Bureau emphasizes health work, to include the adult Indians, as an essential feature of education and contends that every reservation should have a hospital. Besides the systematic physical and sanitary training of the schools, it operated last year 12 tuberculosis hospitals, 31 schools, 10 agency and 27 general hospitals, having a combined bed capacity of 2,411 and employed approximately 150 physicians, 80 nurses and 70 field matrons. This work, in the absence of any serious epidemics, was successful but not fully adequate to the needs of the large Indian country, and the Commissioner has taken definite steps towards a more general elevation of Indian health habits and social standards. One feature of this program is a plan effected for co-operating with the American Red Cross, under which three of its trained nurses have been assigned to districts in the West and Southwest, having in view such service and survey of conditions as will promote a better use of present facilities and their extension to meet the reasonable needs of Indian home life.

Indian farming for the year was very creditable in the character and extent of cultivation and the use of modern methods and implements. The Indians manifested growing interest in agricultural fairs, and in Federal experimentation which has widened to include tests with Peruvian alfalfa, Mexican June corn, Bermuda onions, dates, etc., and are becoming more successful in irrigation methods. The irrigable area of approximately 605,000 acres on 50 reservations will be further enlarged by the completion last year of diversion dams across the Gila River, Arizona, the Big Horn River, Montana, and by other similar construction under way. Allotments of land embracing 750,000 acres were made to individual Indians; restrictions were removed from 150,000 acres and about 1,000 fee patents were issued during the year. Special gains were made to the sheep industry of the Southwest by the introduction of pure-bred rams, about 500 being supplied to the flocks of the Navajo reservations. Under the Bureau's encouragement, a number of stock-grower's associations were formed by the Indians which in some instances have become responsible for the reimbursement of funds loaned for the purchase of improved livestock. An outstanding feature of the year was an industrial campaign in which superintendents, accompanied by a service farmer, a field matron and a physician visited the homes on their reservations for the purpose of improving household conditions and planning activities so that each family would make the best use of its resources. This movement, which will be continued to cover a five-year period, has already resulted in better crops, gardens and homes, notably on the Blackfeet Reservation, Mont., where last spring 90 per cent of the Indians residing on their allotments engaged in farming. The entire Reservation was organized into an industrial association with community chapters, and the Indians voluntarily reduced their usual 4th of July celebration from 10 days to one, so as to give closer attention to their crops and livestock. It is the intention to embrace in this five-year program a definite study and improvement along lines of health,

education, domestic sanitation and social welfare, as well as to give proper stimulus to all individual and tribal industries, and thus establish a policy of such obvious merit that succeeding administrations will readily adopt it. Conjointly, the government Indian schools will this year add to their regular courses special instruction on the essentials of home-building, to conclude with competitive essays by the older pupils.

The Commissioner, in connection with extended personal inspection of field conditions, gave special attention to the affairs of the Chippewas in Minnesota and arranged for a commission to investigate fully all matters complained of by these Indians, particularly as to their land and timber equities in what is known as the Minnesota National Forest, and also asked the Department of Justice to bring original action in the Supreme Court of the United States to determine the respective rights of the Chippewas and the State of Minnesota to the swamp lands in the reservations of that State.

The oil and gas interests of the Indians, now a huge business feature of the Bureau's operations, were further stimulated by an advance in market price of oil. Oklahoma continues to lead in this production where the gross output of oil for the Five Civilized Tribes last year was 8,181,971 barrels and the total revenue to restricted Indians from oil and gas leases and royalties was nearly \$4,000,000. In the more attractive Osage Reservation, one tract of 160 acres was leased for \$1,600,000; several others bringing more than \$1,000,000 each, and the year's sales of leases embraced 102,192 acres for a total bonus of \$22,105,500. The oil production reached 29,000,000 barrels, and the income of the Osages from oil and gas royalties was \$9,235,701. In the Shoshone reservation, Wyoming, the Blackfeet and Crow reservations of Montana, oil leasing and production were active, and test wells were begun in the Navajo reservations of Arizona and New Mexico. Special encouragement was given the Indians' native industries with a view to securing larger returns for their skill, and public interest was favorably attracted to their artistic and useful craftsmanship by an exhibit at the convention of the Federation of Women's Clubs, Chautauqua, New York, and at the Southwestern Indian Fair at Santa Fe, New Mexico, where seven States were represented and a remarkable display was made of blankets, basketry, pottery, silversmithing and other arts. The Indian Bureau, in co-operation with the Department of Agriculture, is planning a special impetus to reservation road building, under an interpretation of the Federal Highway Act by the Comptroller General to the effect that the entire cost of any portion of a public highway crossing an Indian reservation may be paid from government funds apportioned under the act to the State within which the reservation is located, the State being required to provide only upkeep and repairs. Among the many other important activities, the Bureau conducted aggressive prosecutions on the reservations against the liquor traffic, often in co-operation with local authorities; called public attention to the growing use of peyote in various localities and issued a pamphlet of general information on this harmful drug; materially reduced probate expenses without

diminishing the volume of work on heirship cases and Indian estates; requested legislation necessary to adjust long-standing disputes concerning individual holdings and the land and water rights of the Pueblo Indians in New Mexico; took effective action for securing greater benefits to Indian owners and protection to lessees in the extensive Quapaw lead and zinc mining district of Oklahoma, and made large savings in the purchase of service supplies by co-operation with other departments and the Bureau of the Budget, and by watchful study of market conditions.

CHARLES H. BURKE,
Commissioner of Indian Affairs.

INDIANA, an east north-central State of the United States, bounded on the north by Michigan, east by Ohio and Kentucky, south by Kentucky and west by Illinois. It has an area of 36,354 square miles and had a population in 1920 of 2,930,390. The State ranks 37th in size and 11th in population among the States of the Union. In 1920, the population included 2,849,071 whites, 80,810 negroes and 509 Indians and Asiatics. The State had the same year 150,868 foreign born residents of whom 37,337 were Germans, 9,351 Hungarians, 9,100 Austrians, 8,522 English and 7,271 Irish. The urban population in 1920 was 50.6 per cent of the total. Indianapolis, the State capital, has a population of 314,194. Other large cities of the State are Fort Wayne, 86,549; Evansville, 85,264; South Bend, 70,983; Gary, 55,378; Terre Haute, 66,083; East Chicago, 35,967; Muncie, 36,524; Hammond, 36,004; Kokomo, 30,067; Anderson, 29,767; Elkhart, 24,277; Lafayette, 22,486; New Albany, 22,992; Richmond, 26,765; Vincennes, 17,160.

Religion.—The church membership of the State aggregates 1,777,341. Of this number, 272,288 are Roman Catholics, 271,596 Methodists, 85,786 Baptists, 59,209 Presbyterians, 47,879 Lutherans, 10,642 Reformed, 8,848 Episcopalians, and 5,768 Congregationalists.

Education.—Primary education is compulsory for all children from the ages of seven to 14 and from 14 to 16 unless employed. In primary schools in 1921 there were 15,584 teachers and 491,369 pupils. There are 820 public high schools with 5,123 teachers and 86,063 pupils. There is a State normal school for the training of teachers. In 1921, the total expenditure for all public primary schools was \$53,768,002. For higher education there are many institutions in the State, including four of nation-wide fame—Indiana University at Bloomington, De Pauw University at Greencastle, the University of Notre Dame, and Purdue University at Lafayette.

Agriculture.—About 94 per cent of the total area of the State is in farms. There were in 1921, 202,355 farms with an aggregate acreage of 20,948,981 acres, of which 17,393,982 acres were improved land. Assessed value of all farm property in 1919 was \$2,752,301,538. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 4,765,000 acres, 176,305,000 bushels, \$98,731,000; spring wheat, 4,000 acres, 44,000 bushels, \$49,000; winter wheat, 2,052,000 acres, 29,754,000 bushels, \$33,324,000; barley, 42,000 acres, 714,000 bushels, \$414,000; clover seed, 100,000 acres, 120,000 bushels, \$1,176,000; oats, 1,370,000 acres, 28,770,000 bushels, \$11,-

508,000; buckwheat, 6,000 acres, 90,000 bushels, \$90,000; rye, 318,000 acres, 3,816,000 bushels, \$3,015,000; tame hay, 2,575,000 acres, 3,734,000 tons, \$41,821,000; sorghum sirup, 11,000 acres, 935,000 gallons, \$888,000; potatoes, 74,000 acres, 5,624,000 bushels, \$4,724,000; sweet potatoes, 3,000 acres, 375,000 bushels, \$450,000; tobacco, 18,000 acres, 16,200,000 pounds, \$2,754,000; apples, 4,148,000 bushels; peaches, 650,000 bushels, and pears, 300,000 bushels. On 1 Jan. 1923, there were on the farms of the State 696,000 horses, valued at \$51,504,000; 101,000 mules, valued at \$7,777,000; 742,000 milk cows, valued at \$39,326,000; 794,000 other cattle, valued at \$25,726,000; 648,000 sheep, valued at \$5,184,000, and 4,102,000 swine, valued at \$48,814,000.

Mining.—According to the returns of the 14th Census, Indiana ranks 14th in the value of mineral products and ninth in the total number of persons engaged in the mining industries. The mining industries, ranked according to the value of products, were bituminous coal, limestone, petroleum and natural gas, clay and sandstone. The coal, limestone, petroleum and natural gas industries account for about 98 per cent of the total value of the State's mineral products. The coal fields of the State have an area of 6,500 square miles. The output in 1922 amounted to 17,330,000 short tons. The State ranks sixth in coal production. The output of crude petroleum in 1922 was 1,084,000 barrels as compared with 1,163,000 barrels in 1921. The value of the natural gas sold annually is about \$1,500,000. Sandstone and limestone are produced yearly to the value of \$6,000,000. Portland cement output in 1920 was 10,700,000 barrels. Clay working industries of the State—bricks, tiles, pipes, porcelain, etc., have an output valued at \$10,000,000 yearly.

Manufactures.—The manufacturing interests of the State are most varied and include steel and iron, machinery, automobiles and trucks, tin plate, cement, wagons, glass, flour, meat packing, oil refining, etc. The last Industrial Census reported 7,918 manufacturing establishments, employing 329,227 hands, using raw materials valued at \$1,174,971,000 in the census year, and turning out products to the value of \$1,901,846,000 in the same period. Evansville is the largest hardwood market in the United States. Through it passes most of the hardwood lumber cut of the State and also a large proportion of the hardwood cut of the Southern States. Gary, on the Lake Shore, is the centre of the iron and steel industry of the State. The livestock industry of the State centres at Indianapolis, which has the largest interurban railway traffic in the United States.

Communications.—The Ohio and Wabash rivers and Lake Michigan furnish natural facilities for water transport. In addition, the State has 7,707 miles of steam railways and 2,418 miles of electric railways. All lines from the east to Chicago pass through the State, as do many lines to the West and South.

Finances.—On 1 Oct. 1921, the State treasury had on hand a balance of \$3,075,653.38. Gross receipts during the fiscal year, 1921-22, totaled \$33,161,748.98. Advance payments, refunds and transfers, aggregating \$8,048,727.31, reduced this sum to net receipts amounting to \$25,113,021.67. Disbursements during the same

fiscal year amounted to \$32,060,462.83. Advance payments, refunds and transfers, amounting to \$8,048,727.31, made the net disbursements for the fiscal year \$24,011,735.52, leaving on hand a balance on 1 Oct. 1922 of \$4,439,998.31. The estimated receipts for the fiscal year, 1922-23 aggregate \$25,968,021.67, while the authorized expenditures for the same period amount to \$24,866,735.52. The assessed value of real property aggregates \$3,600,145,119; of personal property, \$1,381,051,076.

Government.—The Governor is the executive head of the State and is elected for four years. The Legislature, known as the General Assembly, consists of a Senate of 50 members, elected for four years, and a House of Representatives of 100 members, elected for two years. Legislative sessions are held biennially in January of odd years. In the Federal Congress, Indiana is represented by two senators and 13 representatives. For administrative purposes the State is divided into 92 counties and 1,016 townships.

Officials.—Governor, Warren T. McCray (term expires 1 Jan. 1925); lieutenant-governor, Emmett F. Branch; secretary of state, Ed. Jackson; attorney-general, U. S. Lesh; auditor, Robert Bracken; treasurer, Ora J. Davies; superintendent of education, Benj. Burris.

Judiciary.—Members of Supreme Court, Louis B. Ewhank, David A. Myers, Julius C. Travis, Benj. M. Willoughby and Howard L. Townsend.

INDIANA CENTRAL UNIVERSITY, a co-educational institution controlled by the United Brethren in Christ, founded in 1905 and located at Indianapolis, Ind. In 1922-23 it had a faculty of 17 members, 350 students, property valued at \$590,888 and an income of \$75,000. Irby J. Good, A.M., is president.

INDIANA UNIVERSITY, a State co-educational institution, founded in 1820 and located at Bloomington, Ind. In 1922-23 it had a faculty of 240 members, 3,256 students, property valued at \$2,440,481 and an income of \$1,682,046.45. William Lowe Bryan, LL.D., is president.

INDUSTRIAL ARBITRATION. Nearly 1,500,000 workers were involved in industrial disputes in which were used the good offices of the United States Department of Labor's Commissioners of Conciliation from the beginning of the Harding administration, 4 March 1921 until 30 June 1922 (the latest figures available), a period of 16 months. According to Department of Labor figures, when the Conciliation Service began its work, 70 per cent of the labor difficulties in which its intervention was sought had already reached the strike stage. But conditions had so improved and the services of the Department had so generally been recognized, according to the report, that less than 30 per cent of the cases pending before the service at the time of the report had reached the point where work was suspended. During the 16-months period indicated, over 500 cases of strikes and threatened strikes and lock-outs were acted upon by department officials. Commissioners of Conciliation satisfactorily adjusted 345 cases, while 59 cases were adjusted in co-operation with local officials and agencies. Thirty-nine were pending or in the process of adjustment. Secretary of Labor James J. Davis points out that the period of in-

dustrial readjustment through which the country had been passing made the settlement of industrial disputes more difficult, but despite that fact nearly 90 per cent of the controversies in which the Department used its good offices were equitably and satisfactorily adjusted. It is Secretary Davis' view that these settlements, without doubt, did much to aid in stabilizing the generally disturbed industrial situation. Limitations of appropriations, Secretary Davis reported, made it impossible for him to work out some plans he had for further curtailing the resort to strike or lockout measures in industrial disputes. He believes that with the creation of a conciliation organization such as he has in mind and with an appropriation of approximately \$1,000,000 per year, this gradually to be increased with the growth of industry, practically every labor controversy can be adjusted and nearly every strike can be avoided.

INDUSTRIAL ARTS COLLEGE, a State educational institution for women, founded in 1902 and located at Denton, Texas. In 1922-23 it had a faculty of 110 members and a student enrollment of 1,463. No information as to value of institution's property or its income was available. Frances M. Bralley, LL.D., is president.

INDUSTRIAL WORKERS OF THE WORLD. The Industrial Workers of the World, generally known as the I. W. W., a radical industrial union, did not figure as prominently in the news during 1922 as usual but several important events influenced the internal activity of the organization to such a degree that its public acts were considerably modified. Early in the year a serious split occurred in the ranks of the I. W. W. over adherence to the Third or Communist International at Moscow. The organization as a whole opposed unity with the international group on the grounds that the International would dictate the methods of revolutionary activity in each country, a procedure which was condemned on the score that the International was not as intimately acquainted with local conditions as were the active revolutionists residing within its boundaries, and that the International upheld the "fetish" of political action, long the object of derision of the I. W. W. Thousands of members, however, followed the lead of a few active I. W. W. favoring the Communist International and left the organization, a number of them working for Communism within independent and American Federation of Labor trade unions. At the 14th general convention of the Industrial Workers of the World, held in Chicago during the three weeks beginning 13 November, a resolution was adopted rejecting affiliation with either the Red Trade Union International at Moscow or the newly formed Syndicalist International at Berlin. Quite a furore was created in the organization when the delegates gave as their reason for refusing to adhere to the Syndicalist International the fact that the latter favored "force and violence." The action was regarded as a startling departure from even the expressed policy of what had been considered one of the most extreme groups in the United States. The convention also took a stand for the six-hour day and for a general strike for the release of political prisoners. Membership in the I. W. W., according to figures

given out by the organization, is fixed at 60,000, the largest total since the group came into existence in 1905. More conservative estimates, however, place the figure at 35,000. During the early part of 1922, prosecution of the I. W. W. for illegal activity in labor pursuits subsided, but increased in Oregon and California toward the end of the year. President Harding pardoned or commuted the sentences of 20 or 30 members of the organization held at Leavenworth under the war-time Espionage Act. Efforts were being made at the close of the year to obtain executive clemency for the 40 still in prison.

INFANCY ACT, Federal. See MATERNITY AND INFANCY ACT, FEDERAL.

INFANT MORTALITY. See MATERNITY AND INFANCY ACT, FEDERAL.

INSTITUTE OF EDUCATION, International. See PEACE AND ARBITRATION, INTERNATIONAL.

INSULIN. See MEDICINE AND SURGERY, ADVANCEMENT OF.

INSURANCE. The year 1922 was a prosperous year for most kinds of insurance in the United States. The divorce from Continental European business enforced by war conditions abroad has been seemingly beneficial to insurance here, as foreign business never was very profitable. Life insurance may be said to lead all other activities or investments, the total in force being estimated at \$45,000,000,000 in January, 1923. This is for American policies only, there being some investment in foreign companies by United States citizens, the total of which is not even estimatable, though certainly small. The Association of Life Insurance Presidents reported to the United States Department of Commerce in January 1923, that the estimated new life insurance written in the year 1922 was a record, 12.2 per cent above the great total of 1921. Ordinary new life insurance of the 40 leading reporting companies during 1922 totaled \$4,743,000,000, as against \$4,341,000,000 in 1921, a gain of \$402,000,000 or 9¼ per cent. The industrial new business for 1922 was \$1,418,000,000, as against \$1,257,000,000 for 1921, a gain of \$161,000,000, or 13 per cent; group business was \$221,000,000 in 1922 against \$88,000,000 in 1921, a gain of over 150 per cent. To the above must be added estimates of the amounts written by non-reporting companies, and also the sum of revivals, increases and dividend additions, which brings the grand total of new life insurance for the United States in 1922 to \$9,500,000,000, as against \$8,730,000,000 for the previous year. The total of life insurance in force in the United States, about \$45,000,000,000, has doubled in eight years. The assets of the life insurance companies approximate \$8,000,000,000, exceeding the combined resources of the savings banks and approaching closely the assets of the 16,000 State banks, and the 1,700 trust companies, both of which are estimated to be between \$8,500,000,000 and \$9,000,000,000.

In January 1923, there were in round numbers, 18,500,000 ordinary life policies in force, and 75,000,000 industrial policies. The latter paid premiums in 1922 of nearly \$300,000,000. In New York State alone the insurance of fraternal orders totaled over \$7,000,000,000. The largest individual policy-holders in the country

are Adolph Zukor, head of the Famous Players-Lasky Corp., \$5,000,000; Rodman Wanamaker, \$4,500,000; Pierre Du Pont, \$3,000,000, and James C. Penney, head of the Golden Rules Stores, \$3,000,000. The late John Wanamaker carried \$3,000,000. The average duration of life is lengthening, at least in insurance experience, and the companies are making more in consequence. The New York Life Insurance Company in 1922 had an income of \$212,458,000, and 1,717,898 policies in force for a total of \$4,042,000,000, or nearly \$2,500 per policy. The paid-for new business of the year was \$606,381,000. The Prudential led the industrials with \$6,314,000,000 in force, a gain of \$92,700,000 over 1921. The Travelers Insurance Company received premiums of \$37,335,000 in 1922, divided thus: accident, \$8,125,000; health, \$2,493,000; automobile liability, \$9,181,000; workmen's compensation, \$13,929,000. They paid losses of only \$3,108,000, over half of this being for automobile accidents. The capitalization of life insurance companies has increased materially, many turning their surplus partly into capital. Loans to policy-holders increased during 1922.

In fire insurance the year 1922 was good as far as volume of business was concerned, but the fire losses were greater than in any year except 1906, in which the San Francisco fire nearly tripled the usual total. The fire losses for the last six years in the United States are: 1917, \$250,753,640; 1918, \$290,959,885; 1919, \$269,000,775; 1920, \$330,853,925; 1921, \$332,654,950; 1922, \$410,889,350.

It is apparent that the fire insurance companies had to pay out about \$70,000,000 more than their estimates. A good part of this loss is of the sort that is called "moral," but should be styled incendiary. A long list of small New York City fires is attributed to this cause, and an examination of the fire losses in the territory where cotton losses were severe in the last two years disclosed in a diagram that the curve of cotton loss was followed closely by fire losses.

Accurate figures of the total of fire, accident, automobile liability, workmen's compensation, health, and some scores of other kinds of insurance for 1922 have not been compiled, but it is known that automobile insurance has greatly increased, and workmen's compensation. The States have gone into the latter, and New York State has \$8,000,000 in this insurance fund.

The insurance business in Europe suffers along with every other activity. But there is one unique development in Russia. The Soviet Government has taken over insurance and made it a monopoly. With only 6,500,000 gold rubles (\$3,250,000) capital they are writing a large amount of insurance, in the case of fire on 75 per cent of value, and in some cases, as crops, the insurance is made obligatory. The usual rate is 2½ per cent, and agents' commissions vary from 7 to 15 per cent.

CHARLES H. COCHRANE.

INTER-ALLIED COUNCIL. See PEACE AND ARBITRATION, INTERNATIONAL.

INTERCOLLEGIATE CO-OPERATIVE SOCIETY. See Co-OPERATIVE MOVEMENT.

INTERNAL REVENUE. During the fiscal year 1922 the Internal Revenue Bureau collected \$3,197,451,083, as against \$4,595,357,-

061.95 the preceding year. In 1920, which showed the largest income of eight years, the total was \$5,407,580,251.81. Income and profits tax collections in 1922 totaled \$2,086,918,464.85, as compared with \$3,228,137,673.75 the year before. Sources other than income and profits taxes yielded \$1,110,532,618.15 in 1922, as compared with \$1,367,219,388.20 in 1921. The decrease was largely attributable to the repeal of or reduction in rates of a number of taxes provided for in the Revenue Act of 1921, effective 1 Jan. 1922. The principal decreases in miscellaneous taxes in 1922 were as follows: Estates, \$14,624,414.35; distilled spirits, \$37,034,714.54; transportation, \$102,814,685.58; insurance, \$8,136,690.64; excise taxes, \$55,003,803.12; stamp taxes, \$13,668,528.08; non-alcoholic beverages, \$25,171,688.85; admission to theatres, etc., \$15,890,061.10. The decrease from these sources was somewhat offset by an increase of \$15,539,998.95 in collections from tobacco manufactures. Some of the principal sources of income and the yield therefrom during the years 1922, 1921 and 1920, respectively, were as follows: tobacco manufactures, \$270,759,384.44; \$255,219,385.49; \$295,809,355.44; capital stock tax (including other special taxes) \$90,544,039.59; \$91,281,484.31; 102,933,701.35; distilled spirits (including wines, etc.) \$45,563,350.47; \$82,598,065.01; \$97,905,275.71; sales of internal revenue stamps, \$14,616,958.05; \$20,880,868.86; \$24,437,893.75; miscellaneous, including war excise taxes, \$686,881,719.92; \$914,227,755.36; \$883,863,871.82. For the fiscal year 1922 the cost of administering the internal revenue laws was \$41,577,374.49. The operation cost for the year, on this basis, was \$1.30 for every \$100 collected, as against 87 cents for the preceding year. Deducting, however, \$7,202,723.07, expended in administering the prohibition and narcotic laws and in the enforcement of the child-labor section of the Revenue Act of 1918, leaves \$34,286,651.42 as the expenditure for collecting the internal-revenue taxes for 1922,—the equivalent of \$1.07 for every \$100 collected, as against 72 cents on a similar basis for every \$100 collected in 1921. The difference in the relative cost of collection for these two years is mainly attributable to the large reduction in 1922 revenues incident to such causes as shrinkage in business and incomes, repeal of certain miscellaneous war taxes, etc.

INTERNATIONAL ASSOCIATIONS, INSTITUTES AND SOCIETIES. Some organizations whose official titles begin with the word International, will be found under the important descriptive word of the title.

INTERNATIONAL CHAMBER OF COMMERCE. See CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA.

INTERNATIONAL HEALTH BOARD. See ROCKEFELLER FOUNDATION.

INTERNATIONAL JUSTICE, Permanent Court of. See PEACE AND ARBITRATION, INTERNATIONAL.

INTERNATIONAL LAW, Institute of. See PEACE AND ARBITRATION, INTERNATIONAL.

INTERPARLIAMENTARY UNION. See PEACE AND ARBITRATION, INTERNATIONAL.

IOWA, a north central State of the United States, bounded on the north by

Minnesota, east by Wisconsin and Illinois, south by Missouri, and west by Nebraska and South Dakota. It has an area of 56,147 square miles, and in 1920 had a population of 2,404,021. The State ranks 24th in size and 16th in population. In 1920, the census returns showed 2,384,181 whites, 19,005 negroes, 529 Indians and 306 Asiatics. In the same year there were 345 Indians on reservations, having a total area of 3,251 acres. The same census showed 225,647 foreign born residents. Of these, 17,344 were Norwegians, 18,020 Danes, 70,642 Germans, 22,493 Swedes, 13,036 English, 12,471 Dutchmen, 10,686 Irish, 9,150 Czechoslovakians, 8,929 Canadians, 4,956 Italians, 2,894 Greeks, 4,354 Austrians, 2,560 Mexicans, 2,028 Poles, 7,319 Russians, 3,967 Scotchmen and 2,871 Swiss. The chief cities of the State, with their populations in 1920, are: Des Moines, the capital, 126,468; Sioux City, 71,227; Davenport, 56,727; Dubuque, 39,141; Council Bluffs, 36,162; Cedar Rapids, 45,566; Clinton, 24,151; Burlington, 24,057; Waterloo, 36,230; and Ottumwa, 23,003. In 1920, 36.4 per cent of the population was urban.

Religion.—The Christian churches have an aggregate membership of 937,334, including 262,513 Roman Catholics, 199,036 Methodists, 83,925 Lutherans, 68,899 Presbyterians, 44,937 Baptists, 39,524 Congregationalists, 8,126 Episcopalians and 7,575 Reformed.

Education.—Primary education is free and compulsory for all children between the ages of seven and 16 for 16 consecutive weeks annually. There are in the State 11,266 primary schools with 24,012 teachers and 475,375 pupils; 905 high schools with 3,620 teachers and 61,202 pupils and one normal school with 120 teachers and 3,461 pupils. For purposes of higher education there are in the State the University of Iowa at Iowa City, State College of Agriculture and Mechanic Arts at Ames, Drake University at Des Moines, and Upper Iowa University at Fayette.

Finances.—On 1 Jan. 1922, the balance on hand amounted to \$3,407,223. Revenue from all sources during the year aggregated \$22,248,148. Expenditures for the same period amounted to \$22,679,498. The State has no bonded debt. The assessed value of real property in 1922 was \$3,627,532,791; of personal property \$671,101,604.

Agriculture.—Iowa is pre-eminently an agricultural State and, it is claimed, has the largest proportion of arable land of all States. In 1920, the value of all crops was \$890,391,299. Farm property was valued at over \$8,000,000,000. The area of farm land in 1920 was 33,474,896 acres. Corn is the great crop of the State, which has also extensive livestock interests. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 10,123,000 acres, 455,535,000 bushels, \$255,100,000; spring wheat, 68,000 acres, 1,020,000 bushels, \$1,010,000; winter wheat, 689,000 acres, 15,847,000 bushels, \$15,689,000; barley, 150,000 acres, 4,260,000 bushels, \$2,087,000; clover seed, 132,000 acres, 224,000 bushels, \$2,330,000; oats, 6,023,000 acres, 222,851,000 bushels, \$77,998,000; buckwheat, 5,000 acres, 70,000 bushels, \$88,000; rye, 60,000 acres, 1,140,000 bushels, \$798,000; tame hay, 3,393,000 acres, 4,750,000 tons, \$47,500,000; sorghum sirup, 7,000 acres, 630,000 gallons,

\$624,000; potatoes, 94,000 acres, 8,460,000 bushels, \$5,668,000; sweet potatoes, 4,000 acres, 440,000 bushels, \$616,000; apples, 4,410,000 bushels; peaches, 200,000 bushels; pears, 75,000 bushels, and grain sorghums, 6,000 acres, 144,000 bushels, \$79,000. On 1 Jan. 1923 there were in the State 1,305,000 horses, valued at \$103,095,000; 101,000 mules valued at \$8,080,000; 1,160,000 milk cows, valued at \$67,280,000; 3,479,000 other cattle, valued at \$122,461,000; 829,000 sheep, valued at \$6,964,000, and 9,615,000 swine, valued at \$123,072,000.

Mining and Other Products.—There are about 19,000 square miles of productive coal fields in Iowa in which 16,000 miners are regularly employed. The average production is about 5,000,000 tons yearly. Other mining products are gypsum, ochre, sandstone, limestone, clays and cement. Manufacturing industries of the State are mostly those connected with agricultural produce and livestock products. The last Manufacturing Census showed 5,683 establishments, employing 105,439 persons, using raw materials to the value of \$520,240,807 and turning out products valued at \$745,472,697. Meat packing and flour milling are the chief industries.

Communications.—The transportation system of the State is highly developed. Railways traverse it in all directions, carrying a huge local as well as vast interstate tonnage. River transportation on the Mississippi and the Missouri is also immense. There are in the State 9,808 miles of railways and 946 miles of electric railways.

Government.—Executive power is vested in the Governor, who is elected for a term of two years. The legislature, officially called the General Assembly, is composed of a Senate of 50 members and of a House of Representatives of 108 members, who meet biennially. Senators are elected for four years and representatives for two years. Iowa sends two senators and 11 representatives to the Federal Congress at Washington. The Governor in 1922 was N. E. Kendall, who was re-elected in November 1922 for the two-year term, January 1923 to January 1925. The Secretary of State in 1922 was W. S. Allen.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, a State co-educational institution, founded 21 Oct. 1868 and located at Ames, Iowa. For the year 1921-22 it had a faculty of 359 members, 7,096 students, property valued at \$5,818,686.57 and an income of \$3,052,557.16. No figures given for 1922-23. Raymond A. Pearson, LL.D., is president.

IOWA, University of, a State co-educational institution, founded in 1847 and located at Iowa City, Iowa. In 1922-23 it had a faculty of 450 members, 6,750 students, property valued at \$6,500,000 and an income of \$3,500,000. Walter Albert Jessup, Ph.D., LL.D., is president.

IRAQ. See MESOPOTAMIA.

IRELAND, the lesser of the two islands which constitute the United Kingdom of Great Britain and Ireland, and since January 1922 officially known as the Irish Free State. The island has an area of 32,586 square miles and an estimated population in 1921 of 4,496,000. About 1 per cent of the people speak Gaelic only,

86 per cent speak English only and 13 per cent speak both Gaelic and English. Of the total population 96 per cent are Irish born. Dublin, the capital, has a population of 403,030. Belfast, the seat of the government of Northern Ireland, has a population of 393,000. The civic population is 31.1 per cent of the total. The total number of births in 1920 was 99,536; total deaths, 66,538; marriages, 26,826.

Religion.—According to the last census there were in Ireland 3,242,670 Roman Catholics; 576,611 Episcopalians; 440,525 Presbyterians; 62,382 Methodists; and 68,031 of other professions. The Roman Catholic Church has four archbishops, 24 bishops, and 3,830 priests. The Protestant Episcopal Church has two archbishops, 11 bishops, and 1,500 clergymen. The largest Presbyterian body has 36 presbyteries, 615 ministers, 561 congregations and 105,000 members.

Education.—Education in the primary grades is free and compulsory but in many rural districts the attendance law is poorly enforced. There are 8,002 primary schools with 688,955 enrolled pupils and an average attendance of 488,031. In the primary schools there are 7,590 principal teachers, 5,770 assistant teachers, and 2,380 junior assistant teachers. There are seven training colleges with facilities for the training of 1,195 normal students. Primary education is now administered by the two governments functioning in Ireland. The Northern Government has its own education department and the Free State has charge of primary education in its territory. Secondary education is administered by the Intermediate Education Board. The Board holds examinations every year and pays grants to secondary schools on the results of this examination and also on the results of periodic inspections. In 1921, 12,419 students presented themselves for the intermediate examinations. Technical education is organized under the borough county councils and urban district councils. There are 42,293 students receiving technical education in urban and county technical schools. There are also the Royal College of Science and the Metropolitan School of Art, each having about 400 students. Higher education is provided by the National University, and the University of Dublin, Dublin, and the Queens University, Belfast. The first of these has three constituent colleges—the University Colleges of Cork, Galway and Dublin. In Ireland there are 375 professors and about 5,000 university students. There are several seminaries for the training of the clergy, the largest being Saint Patrick's College, Maynooth, with 700 students.

Finance.—For the fiscal year ended 31 March 1921, Ireland contributed £46,448,000 to imperial revenue, while the Irish expenditure amounted to £32,976,000. The fiscal estimates for 1922-23 show a total expenditure forecast at £37,709,586 for the government of Southern Ireland. The cost of the army for the year is placed at £7,245,000. Compensation for destroyed property was slated to cost £10,000,000. The Post Office Department was allotted £2,750,000 and £4,000,000 were allotted to education. At the close of 1922 the balance sheet of the five Irish banks showed total assets of £171,369,818 as compared with £172,756,819 at the close of 1921.

Production.—Of the total area, 296,000 acres are woods and plantations, 9,122,000 acres are in permanent pasture and 5,271,000 acres are arable land. In 1921 there were 43,000 acres of wheat which yielded 181,000 quarters; 175,000 acres of barley the yield from which was 714,000 quarters; 1,254,000 acres of oats which yielded 5,768,000 quarters; 14,000 acres of beans; 3,000 acres of peas; 568,000 acres of potatoes, the yield being 2,556,000 tons; 266,000 acres of turnips which yielded 3,882,000 tons; 79,000 acres of mangolds which yielded 1,510,000 tons; and 2,370,000 acres of hay, which yielded 3,258,000 tons. There are 571,985 farm holdings in the country of which 372,815 are owned by the occupiers and 199,170 are rented. The fishing industry is important, the value in 1921 being £308,588 for 20,421 tons of fish. The live stock in the country in 1921 numbered 5,197,000 head of cattle, 3,708,000 sheep, 977,000 swine, 261,000 goats, 24,500,000 poultry, 555,000 horses, 230,000 asses, and 27,000 mules.

Commerce.—The foreign trade of Ireland aggregates about \$1,500,000,000 yearly, exports and imports being evenly balanced. Of Irish exports 53 per cent are farm produce, food, drink and tobacco. Forty-three per cent are manufactured goods and 4 per cent are raw materials. In 1921–22 Ireland exported eggs to the value of \$70,000,000; cattle to the value of \$120,000,000; sheep to the value of \$9,000,000; pigs to the value of \$11,000,000; potatoes to the value of \$5,000,000; condensed milk to the value of \$5,500,000; cheese to the value of \$9,000,000; poultry valued at \$12,000,000; oats valued at \$13,000,000; flax to the value of \$2,000,000; and butter to the value of \$20,000,000. Exports of manufactures the same year included \$140,000,000 worth of linen goods, of which \$12,000,000 went to the United States. The exports of whiskey and porter aggregated \$50,000,000. The island is now considered one of the best of world markets because the purchasing power of the inhabitants now exceeds \$800,000,000 gold per annum. In the year named above Ireland imported coal valued at \$50,000,000, of which the United States furnished but one cargo. The United States leads in shipments of cotton, wheat, motor cars and gasoline. The value of these aggregated \$25,000,000; corn was imported from the Argentine to the value of \$25,000,000; wine from Spain and France to the value of \$2,000,000; cutlery and hardware to the value of \$5,000,000; and \$7,500,000 worth of candy and confectionery. The United States sold in Ireland about \$48,000,000 worth of foodstuffs, wheat, manufactures, etc., last year and purchased goods there to the value of \$38,000,000. Imports of shoes last year amounted to \$24,000,000 of which \$275,000 came from the United States. The leading export of the United States to Ireland is leaf tobacco, Ireland purchasing on the average over \$8,000,000 worth each year. The imports of sugar total about \$25,000,000 yearly, of which the United States furnishes less than one-third. England and her colonies are Ireland's best customers, taking about 99 per cent of the manufactures and agricultural products. On the other hand, England sells Ireland 96 per cent of the latter's imports. The rest of the world supplies the remaining 4 per cent, but the extent of the participation of

the United States in this trade is one-half of one per cent.

Government.—The tension in the relations between Great Britain and Ireland became acute just prior to the outbreak of the World War, when with the passage of the Home Rule Bill, Sir Edward Carson inaugurated the Ulster Volunteer movement and gathered to his banner 100,000 young men, furnished them with arms from Germany and prepared to resist Parliament. The counter movement of the National Volunteers followed but before these mutually hostile forces clashed the World War broke out and the Home Rule Bill was placed on the Statute Book but its operation suspended for the duration of the war and one year thereafter. During the first two years of the war Ireland was relatively quiescent and many young men of the country went into the British service feeling that the relations of the two peoples were adjusted on a firm basis through the Home Rule Bill. But quiet was not to continue for a number of ardent spirits felt that Great Britain had suspended the operation of the Home Rule Bill through fear of Ulster and after the war would find a way to dishonor it. The Easter Rebellion of 1916 was abortive but the political effect was far-reaching. The old Nationalist party led by John Redmond was discredited and its place taken by the Sinn Fein, or Separatist party. This party swept the country at the general election of 1918 with the exception of the northeast counties where the Unionist element predominated. To meet the difficulty separate parliaments were set up in the North and South by the Act of 1920—the two bodies to choose members to sit in a Council of Ireland. The Unionists of Ulster accepted the gift of a parliament, members of which were elected 24 May 1921, and parliament opened by the King the following month. The Sinn Fein refused to work the Act and their elected members assembled in Dublin in the Republican *Dail Eireann* and again proclaimed the Republic with Eamonn de Valera as President. Chaos followed in the country and for many months a guerilla war of the bitterest intensity was fought in all counties. On 7 July 1921, through the efforts of Martin H. Glynn, ex-governor of New York, and the Vatican, the preliminaries of a truce were arranged and the British and Irish governments each sent delegations for the purpose of discussing a settlement. After prolonged negotiation a treaty was signed 6 Dec. 1921. The text of the treaty follows:

ANGLO-IRISH TREATY.

Article I.—Ireland shall have the same constitutional status in the community of nations known as the British Empire as the Dominion of Canada, the Commonwealth of Australia, the Dominion of New Zealand and the Union of South Africa, with a Parliament having powers to make laws for peace and order and good government in Ireland and an executive responsible to that Parliament, and shall be styled and known as the Irish Free State.

Article II.—Subject to provisions hereinafter set out, the position of the Irish Free State in relation to the Imperial Parliament, the Government and otherwise shall be that of the Dominion of Canada, and the law, practice and constitutional usage governing the relationship of the Crown or representative of the Crown and the Imperial Parliament to the Dominion of Canada shall govern their relationship to the Irish Free State.

Article III.—A representative of the Crown in Ireland shall be appointed in like manner as the Governor General of Canada and in accordance with the practice observed in making such appointments.

Article IV.—The oath to be taken by the members of the Parliament of the Irish Free State shall be in the following form.

"I do solemnly swear true faith and allegiance to the Constitution of the Irish Free State as by law established, and that I will be faithful to his Majesty King George V., and his heirs and successors by law, in virtue of the common citizenship of Ireland with Great Britain and my adherence to and membership of the group of nations forming the British Commonwealth of Nations."

Article V.—The Irish Free State shall assume liability for service of the public debt of the United Kingdom as existing at the date thereof and toward the payment of war pensions as existing on that date in such proportion as may be fair and equitable, having regard for any just claims on the part of Ireland by way of set-off or counter-claim, the amount of such sums being determined, in default of agreement, by the arbitration of one or more independent persons being citizens of the British Empire.

Article VI.—Until an arrangement has been made between the British and Irish Governments whereby the Irish Free State undertakes her own coastal defense, defense by sea of Great Britain and Ireland shall be undertaken by his Majesty's imperial forces, but this shall not prevent the construction or maintenance by the Government of the Irish Free State of such vessels as are necessary for the protection of the revenue or the fisheries. The foregoing provisions of this article shall be reviewed at a conference of representatives of the British and Irish Governments to be held at the expiration of five years from the date hereof with a view to the undertaking by Ireland of a share in her own coastal defense.

Article VII.—The Government of the Irish Free State shall afford to his Majesty's imperial force (a) in time of peace such harbor and other facilities as are indicated in the annex hereto, or such other facilities as may from time to time be agreed between the British Government and the Government of the Irish Free State, and (b) in time of war or of strained relations with a foreign power such harbour and other facilities as the British Government may require for the purposes of such defense, as aforesaid.

Article VIII.—With a view to securing observance of the principal of international limitation of armaments, if the Government of the Irish Free State establishes and maintains a military defense force, the establishment thereof shall not exceed in size such proportion of the military establishments maintained in Great Britain as that which the population of Ireland bears to the population of Great Britain.

Article IX.—The ports of Great Britain and the Irish Free State shall be freely open to the ships of the other country on the payment of the customary port and other dues.

Article X.—The Government of the Irish Free State agrees to pay fair compensation, on terms not less favorable than those accorded by the Act of 1920, to Judges, officials, members of the police forces and other public servants who are discharged by it or who retire in consequence of the change of government effected in pursuance of the hereof paragraph.

Provided that this agreement shall not apply to members of the auxiliary police force or persons recruited in Great Britain for the Royal Irish Constabulary during the two years next preceding the date hereof. The British Government will assume responsibility for such compensation or pensions as may be payable to any of these excepted persons.

Article XI.—Until the expiration of one month from the passing of the Act of Parliament for the ratification of this instrument, the powers of the Parliament and the Government of the Irish Free State shall not be exercisable as respects Northern Ireland, and the provisions of the Government of Ireland Act of 1920 shall, so far as they relate to Northern Ireland, remain of full force and effect, and no election shall be held for the return of members to serve in the Parliament of the Irish Free State for the constituencies of Northern Ireland unless a resolution is passed by both houses of Parliament of Northern Ireland in favor of holding such elections before the end of said month.

Article XII.—If before the expiration of said month an address is presented to his Majesty by both houses of Parliament of Northern Ireland to that effect, the powers of the Parliament and Government of the Irish Free State shall no longer extend to Northern Ireland, and the provisions of the Government of Ireland Act of 1920 (including those relating to the Council of Ireland) shall, so far as they relate to Northern Ireland, continue to be of full force and effect, and this instrument shall have effect, subject to the necessary modifications.

Provided, that if such an address is so presented, a commission consisting of three persons, one to be appointed by the Government of the Irish Free State, one to be appointed by the Government of Northern Ireland, and one, who shall be

Chairman, to be appointed by the British Government, shall determine in accordance with the wishes of the inhabitants, so far as may be compatible with economic and geographic conditions, the boundaries between Northern Ireland and the rest of Ireland, and for the purposes of the Government of Ireland Act of 1920 and of this instrument the boundary of Northern Ireland shall be such as may be determined by such commission.

Article XIII.—For the purpose of the last foregoing article the powers of the Parliament of Southern Ireland under the Government of Ireland Act of 1920, to elect members of the Council of Ireland, shall, after the Parliament of the Irish Free State is constituted, be exercised by that Parliament.

Article XIV.—After the expiration of said month, if no such address as mentioned in Article XII. hereof is presented, the Parliament of the Government of Northern Ireland shall continue to exercise as respects Northern Ireland the powers conferred upon them by the Government of Ireland Act of 1920, but the Parliament of the Government of the Irish Free State shall in Northern Ireland have in relation to matters, in respect of which the Parliament of Northern Ireland has not the power to make laws under that act (including matters which, under said act, are within the jurisdiction of the Council of Ireland), the same powers as in the rest of Ireland, subject to such other provisions as may be agreed to in the manner hereinafter appearing.

Article XV.—At any time after the date hereof the Government of Northern Ireland and the Provisional Government of Southern Ireland, hereinafter constituted, may meet for the purpose of discussing provisions, subject to which the last of the foregoing article is to operate in the event of no such address as is therein mentioned being presented, and those provisions may include: (a) Safeguards with regard to patronage in Northern Ireland; (b) safeguards with regard to the collection of revenue in Northern Ireland; (c) safeguards with regard to import and export duties affecting the trade and industry of Northern Ireland; (d) safeguards for the minorities in Northern Ireland; (e) settlement of financial relations between Northern Ireland and the Irish Free State; (f) establishment and powers of a local militia in Northern Ireland and the relation of the defense forces of the Irish Free State and of Northern Ireland, respectively, and if at any such meeting provisions are agreed to, the same shall have effect as if they were included among the provisions subject to which the powers of Parliament and of the Government of the Irish Free State are to be exercisable in Northern Ireland under Article XIV. hereof.

Article XVI.—Neither the Parliament of the Irish Free State nor the Parliament of Northern Ireland shall make any law so as either directly or indirectly to endow any religion or prohibit or restrict the free exercise thereof or give any preference or impose any disability on the account of religious belief or religious status, or affect prejudicially the right of any child to attend school receiving public money without attending the religious instruction of the school, or make any discrimination as respects State aid between schools under the management of the different religious denominations, or divert from any religious denomination or any educational institution any of its property except for public utility purposes and on the payment of compensation.

Article XVII.—By way of provisional arrangement for the administration of Southern Ireland during the interval which must elapse between the date hereof and the constitution of a Parliament and a Government of the Irish Free State in accordance therewith, steps shall be taken forthwith for summoning a meeting of the Members of Parliament elected for the constituencies in Southern Ireland since the passing of the Government of Ireland Act in 1920 and for constituting a Provisional Government. And the British Government shall take steps necessary to transfer to such Provisional Government the powers and machinery requisite for the discharge of its duties, provided that every member of such Provisional Government shall have signified in writing his or her acceptance of this instrument. But this arrangement shall not continue in force beyond the expiration of twelve months from the date hereof.

Article XVIII.—This instrument shall be submitted forthwith by his Majesty's Government for the approval of Parliament and by the Irish signatories to a meeting summoned for the purpose of members elected to sit in the House of Commons of Southern Ireland, and, if approved, it shall be ratified by the necessary legislation.

Signed on behalf of the British delegation.

LLOYD GEORGE,
AUSTEN CHAMBERLAIN,
BIRKENHEAD,
WINSTON CHURCHILL,
WORTHINGTON-EVANS,
GORDON HEWART,
HAMAR GREENWOOD.

On behalf of the Irish delegation:

ART UA GRIOBHTHA (ARTHUR GRIFFITH)
 MICEAL O. O. SILEAIN, (MICHAEL COLLINS)
 RIOBARD BARTUN, (ROBERT C. BARTON)
 E. S. DUGAN, (EAMON J. DUGGAN)
 SEORSA GHABGAIN UI DHUBHTHAIGH (GEORGE GAVAN DUFFY).

Dated the 6th of December, 1921.

ANNEX

1. The following are the specific facilities required:

DOCKYARD PORT AT BEREHAVEN—(a) Admiralty property and rights to be retained as at the date hereof. Harbour defences to remain in charge of British care and maintenance parties.

QUEENSTOWN—(b) Harbour defences to remain in charge of British care and maintenance parties. Certain mooring buoys to be retained for use of his Majesty's ships.

BELFAST LOUGH—(c) Harbour defences to remain in charge of British care and maintenance parties.

LOUGH SWILLY—(d) Harbour defences to remain in charge of British care and maintenance parties.

AVIATION—(e) Facilities in the neighbourhood of the above ports for coastal defence by air.

OIL FUEL STORAGE—(f) Haulbowline, Rathmullen—To be offered for sale to commercial companies under guarantee that purchasers shall maintain a certain minimum stock for Admiralty purposes.

2. A Convention shall be made between the British Government and the Government of the Irish Free State to give effect to the following conditions:

(a) That submarine cables shall not be landed or wireless stations for communication with places outside Ireland be established except by agreement with the British Government; that the existing cable landing rights and wireless concessions shall not be withdrawn except by agreement with the British Government, and that the British Government shall be entitled to land additional submarine cables or establish additional wireless stations for communication with places outside Ireland.

(b) That lighthouses, buoys, beacons and any navigational marks or navigational aids shall be maintained by the Government of the Irish Free State as at the date hereof, and shall not be removed or added to except by agreement with the British Government.

(c) That war signal stations shall be closed down and left in charge of care and maintenance parties, the Government of the Irish Free State being offered the option of taking them over and working them for commercial purposes subject to Admiralty inspection and guaranteeing the upkeep of existing telegraphic communication therewith.

3. A Convention shall be made between the same Governments for the regulation of Civil Communication by Air.

IRISH CONSTITUTION.

The text of the Constitution of the Irish Free State was published by the Provisional Government 16 June 1922, on the eve of the polling for the Irish Provisional Parliament elections. The document consists of a preamble and five sections, dealing, respectively, with fundamental rights, legislative provisions, the executive, the judiciary and transitory provisions. The preamble declares that where the treaty and the Constitution shall clash the treaty shall prevail. The official text is as follows:

PRELIMINARY—These presents shall be construed with reference to the Articles of Agreement for a treaty between Great Britain and Ireland set forth in the schedule hereto annexed (hereinafter referred to as "the Scheduled Treaty"), which are hereby given the force of law, and if any provision of this Constitution or of any amendment thereof or of any law made thereunder is in any respect repugnant to any of the provisions of the Scheduled Treaty, it shall, to the extent only of such repugnancy, be absolutely void and inoperative and the Parliament and the Executive Council of the Irish Free State shall respectively pass such further legislation and do all such other things as may be necessary to implement the Scheduled Treaty.

SECTION I.—FUNDAMENTAL RIGHTS

Article 1. The Irish Free State (Saorstát Éireann) is a co-equal member of the Community of Nations forming the British Commonwealth of Nations.

Article 2. All powers of government and all authority, legislative, executive and judicial, are derived from the people and the same shall be exercised in the Irish Free State (Saorstát Éireann) through the organizations established by or under, and in accord with, this Constitution.

Article 3. Every person domiciled in the Irish Free State (Saorstát Éireann) at the time of the coming into operation of this Constitution who was born in Ireland or either of whose parents was born in Ireland or who has been so domiciled in the area of the jurisdiction of the Irish Free State (Saorstát Éireann) for not less than seven years is a citizen of the Irish Free State (Saorstát Éireann) and shall within the limits of the Irish Free State (Saorstát Éireann) enjoy the privileges and be subject to the obligations of such citizenship, provided that any such person being a citizen of another State may elect not to accept the citizenship hereby conferred; and the conditions governing the future acquisition and termination of citizenship in the Irish Free State (Saorstát Éireann) shall be determined by law. Men and women have equal rights as citizens.

Article 4. The national language of the Irish Free State (Saorstát Éireann) is the Irish language, but the English language shall be equally recognized as an official language. Nothing in this article shall prevent special provisions being made by the Parliament (Oireachtas) for districts or areas in which only one language is in use.

Article 5. No title of honor in respect of any services rendered in or in relation to the Irish Free State (Saorstát Éireann) may be conferred on any citizen of the Irish Free State (Saorstát Éireann) except with the approval or upon the advice of the Executive Council of the State.

Article 6. The liberty of the person is inviolable and no person shall be deprived of his liberty except in accordance with law. Upon complaint made by or on behalf of any person that he is being unlawfully detained, the High Court (Ard Chúirt) and any and every Judge thereof shall forthwith inquire into the same and may make an order requiring the person in whose custody such person shall be detained to produce the body of the person so detained before such Court or Judge without delay and to certify in writing as to the cause of the detention and such Court or Judge shall thereupon order the release of such person unless satisfied that he is being detained in accordance with the law.

Article 7. The dwelling of each citizen is inviolable and shall not be forcibly entered except in accordance with law.

Article 8. Freedom of conscience and the free profession and practice of religion are inviolable rights of every citizen, and no law may be made either directly or indirectly to endow any religion, or prohibit or restrict the free exercise thereof or give any preference, or impose any disability, on account of religious belief or religious status, or affect prejudicially the right of any child to attend a school receiving public money without attending the religious instruction at the school, or make any discrimination as respects State aid between schools under the management of different religious denominations, or divert from any religious denomination or any educational institution any of its property except for the purpose of roads, railways, lighting, water or drainage works, or other works of public utility, and on payment of compensation.

Article 9. The right of free expression of opinion as well as the right to assemble peaceably and without arms, and to form associations or unions is guaranteed for purposes not opposed to public morality. Laws regulating the manner in which the right of forming associations and the right of free assembly may be exercised shall contain no political, religious or class distinction.

Article 10. All citizens of the Irish Free State (Saorstát Éireann) have the right to free elementary education.

Article 11. The rights of the State in and to natural resources, the use of which is of national importance, shall not be alienated. Their exploitation by private individuals or associations shall be permitted only under State supervision and in accordance with conditions and regulations approved by legislation.

SECTION II.—LEGISLATIVE PROVISIONS

... The Legislature

Article 12. A Legislature is hereby created to be known as the Parliament of the Irish Free State (Oireachtas). It shall consist of the King and two houses—the Chamber of Deputies (Dail Éireann) and the Senate (Seanad Éireann). The power of making laws for the peace, order and good government of the Irish Free State (Saorstát Éireann) is vested in the Parliament (Oireachtas).

Article 13. The Parliament (Oireachtas) shall sit in or near the City of Dublin or in such other place as from time to time it may determine.

Article 14. All citizens of the Irish Free State (Saorstát Éireann), without distinction of sex, who have reached the age of twenty-one years and who comply with the provisions of the prevailing electoral laws shall have the right to vote for members of the Chamber of Deputies (Dail Éireann), and to take part in the Referendum or Initiative. All citizens of the Irish Free State (Saorstát Éireann), without distinction of sex who have reached the age of 30 years and who comply with the provisions of the prevailing electoral laws shall have the right to vote for members of the Senate (Seanad Éireann). No voter may exercise more than one vote and the voting shall be by secret ballot. The mode and place of exercising this right shall be determined by law.

Article 15. Every citizen who has reached the age of 21 years and who is not placed under disability or incapacity by the Constitution or by law shall be eligible to become a member of the Chamber of Deputies (Dail Éireann).

Article 16. No person may be at the same time a member both of the Chamber (Dail Éireann) and of the Senate (Seanad Éireann).

Article 17. The oath to be taken by members of Parliament (Oireachtas) shall be in the following form:

I do solemnly swear true faith and allegiance to the Constitution of the Irish Free State as by law established, and that I will be faithful to H. M. King George V., his heirs and successors by law in virtue of the common citizenship of Ireland with Great Britain and her adherence to and membership of the group of nations forming the British Commonwealth of Nations. Such oath shall be taken and subscribed by every member of the Parliament (Oireachtas) before taking his seat therein before the representative of the Crown or some person authorized by him.

Article 18. Every member of the Parliament (Oireachtas) shall, except in case of treason, felony or breach of the peace, be privileged from arrest in going to and returning from and while within the precincts of either house, and shall not be amenable to any action or proceeding at law in respect to any utterance in either house.

Article 19. All reports and publications of the Parliament (Oireachtas) or of either house thereof shall be privileged and utterances made in either house wherever published shall be privileged.

Article 20. Each house shall make its own rules and Standing Orders, with power to attach penalties for their infringement, and shall have power to insure freedom of debate, to protect its official documents and the private papers of its members, and to protect itself and its members against any person or persons interfering with, molesting or attempting to corrupt its members in the exercise of their duties.

Article 21. Each house shall elect its own Chairman and Deputy Chairman, and shall prescribe their powers, duties and terms of office.

Article 22. All matters in each house shall, save as otherwise provided by this Constitution, be determined by a majority of the votes of the members present other than the Chairman or presiding member, who shall have and exercise a casting vote in the case of an equality of votes. The number of members necessary to constitute a meeting of either house for the exercise of its powers shall be determined by its Standing Orders.

Article 23. The Parliament (Oireachtas) shall make provision for the payment of its members and may, in addition, provide them with free traveling facilities in any part of Ireland.

Article 24. The Parliament (Oireachtas), shall hold at least one session each year. The Parliament (Oireachtas) shall be summoned and dissolved by the Representative of the Crown in the name of the King, and subject as aforesaid the Chamber (Dail Éireann) shall fix the date of reassembly of the Parliament (Oireachtas) and the date of the conclusion of the session of each house provided that the session of the Senate (Seanad Éireann) shall not be concluded without its own consent.

Article 25.ittings of each house of the Parliament (Oireachtas) shall be public. In cases of special emergency either house may hold a private sitting with the assent of two-thirds of the members present.

B. The Chamber of Deputies (Dail Éireann)

Article 26. The Chamber (Dail Éireann) shall be composed of members who represent constituencies determined by law. The number of members shall be fixed from time to time by the Parliament (Oireachtas), but the total number of members of the Chamber (Dail Éireann), shall not be fixed at less than one member for each thirty thousand of the population, or at more than one member for each twenty thousand of the population: Provided that the proportion between the number of members to be elected at any time for each constituency and the population of each constituency, as ascertained at the last preceding census, shall, so far as possible, be identical throughout the country. The members shall be elected upon principles of proportional representation. The Parliament (Oireachtas) shall revise

the constituencies at least once in every ten years, with due regard to changes in distribution of the population, but any alterations in the constituencies shall not take effect during the life of the Chamber (Dail Éireann) sitting when such revision is made.

Article 27. At a general election for the Chamber (Dail Éireann) the polls shall be held on the same day throughout the country and that day shall be a day not later than thirty days after the date of the dissolution and shall be proclaimed a public holiday. The Chamber (Dail Éireann) shall meet within one month of such day, and shall unless earlier dissolved continue for four years from the date of its first meeting and not longer. The Chamber (Dail Éireann) may not at any time be dissolved except on the advice of the Executive Council.

Article 28. In case of death, resignation or disqualification of a member of the Chamber (Dail Éireann), the vacancy shall be filled by the election in manner to be determined by law.

C. The Senate (Seanad Éireann)

Article 29. The Senate (Seanad Éireann) shall be composed of citizens who have done honor to the nation by reason of useful public service or who, because of special qualifications or attainments, represent important aspects of the nation's life.

Article 30. Every university in the Irish Free State (Saorstát Éireann) shall be entitled to elect two representatives to the Senate (Seanad Éireann). The number of Senators exclusive of university members shall be fifty-six. A citizen to be eligible for membership of the Senate (Seanad) must be a person eligible to become a member of the Chamber (Dail Éireann) and must have reached the age of 35 years. Subject to any provision for the constitution of the first Senate (Seanad) the term of office of a member of the Senate (Seanad) shall be twelve years.

Article 31. One-fourth of the members of the Senate (Seanad Éireann) exclusive of the university members shall be elected every three years from a panel constituted as hereinafter mentioned at an election at which the Irish Free State (Saorstát Éireann) shall form one electoral area, and the elections shall be held on principles of proportional representation. One member shall be elected by each university entitled to representation in the Senate (Seanad) every six years.

Article 32. Before each election of members of the Senate (Seanad Éireann)—other than university members—a panel shall be formed consisting of—

(a) Three times as many qualified persons as there are members to be elected, of whom two-thirds shall be nominated by the Chamber (Dail Éireann), voting according to principles of proportional representation, and one-third shall be nominated by the Senate (Seanad Éireann) voting according to principles of proportional representation, and

(b) Such persons who have at any time been members of the Senate (Seanad)—including members about to retire—as signify by notice in writing addressed to the President of the Executive Council their desire to be included in the panel.

The method of proposal and selection for nomination shall be decided by the Chamber (Dail Éireann) and Senate (Seanad), respectively, with special reference to the necessity for arranging for the representation of important interests and institutions in the country; provided that each proposal shall be in writing and shall state the qualifications of the person proposed. As soon as the panel has been formed a list of the names of the members of the panel arranged in alphabetical order with their qualifications shall be published.

Article 33. In case of the death, resignation, or disqualification of a member of the Senate (Seanad Éireann)—other than a university member—his place shall be filled by a vote of the Senate (Seanad). Any Senator so chosen shall retire from office at the conclusion of the three-year period then running and the vacancy or vacancies thus created shall be additional to the places to be filled under Article 31. The term of office of the members chosen at the election after the first fourteen elected shall conclude at the end of the period or periods at which the Senator or Senators by whose death or withdrawal the vacancy or vacancies was or were originally created would be due to retire; provided that the fifteenth member shall be deemed to have filled the vacancy first created in order of time and so on.

In case of death, resignation or disqualification of a university member of the Senate (Seanad), the university by which he was elected shall elect a person to fill his place, and the member so elected shall hold office so long as the member in whose place he was elected would have held office.

D. Legislation

Article 34. The Chamber (Dail Éireann) shall in relation to the subject matter of money bills, as hereinafter defined, have legislative authority exclusive of the Senate (Seanad Éireann).

A money bill means a bill which contains only provisions dealing with all or any of the following subjects—namely,

the imposition, repeal, remission, alteration or regulation of taxation; the imposition for the payment of debt or other financial purposes of charges on public moneys, or the variation or repeal of any such charges; supply; the appropriation, receipt, custody, issue or audit of accounts of public money; the raising or guarantee of any loan or the payment thereof; subordinate matters incidental to those subjects or any of them. In this definition the expressions "taxation," "public money," and "loan," respectively, do not include any taxation, money or loan raised by local authorities or bodies for local purposes.

The Chairman of the Chamber (Dail) shall certify any bill which in his opinion is a money bill to be a money bill, but if within three days after a bill has been passed by the Chamber (Dail) two-fifths of the members of either house by notice in writing addressed to the Chairman of the house of which they are members so require, the question whether the bill is or is not a money bill shall be referred to a Committee of Privileges consisting of three members elected by each House with Chairman, who shall be the Senior Judge of the Supreme Court able and willing to act, and who, in the case of an equality of votes, but not otherwise, shall be entitled to vote. The decision of the committee on the question shall be final and conclusive.

Article 35. The Chamber (Dail Eireann) shall as soon as possible after the commencement of each financial year consider the budget of receipts and expenditure of the Irish Free State (Saorstát Eireann) for that year, and, save in so far as may be provided by specific enactment in each case, the legislation required to give effect to the budget of each year shall be enacted within that year.

Article 36. Money shall not be appropriated by vote, resolution, or law, unless the purpose of the appropriation has in the same session been recommended by a message from the Representative of the Crown acting on the advice of the Executive Council.

Article 37. Every bill initiated in and passed by the Chamber (Dail Eireann) shall be sent to the Senate (Seanad Eireann), and may, unless it be a money bill, be amended in the Senate (Seanad Eireann), and the Chamber (Dail Eireann) shall consider any such amendment; but a bill passed by the Chamber (Dail Eireann) and considered by the Senate (Seanad Eireann) shall, not later than two hundred and seventy days after it shall have been first sent to the Senate (Seanad), or such longer period as may be agreed upon by the two houses, be deemed to be passed by both houses in its form as last passed by the Chamber (Dail); provided that any money bill shall be sent to the Senate (Seanad) for its recommendations and at a period not longer than fourteen days after it shall have been sent to the Senate (Seanad), it shall be returned to the Chamber (Dail), which may pass it, accepting or rejecting all or any of the recommendations of the Senate (Seanad), and as so passed shall be deemed to have been passed by both houses. When a bill other than a money bill has been sent to the Senate (Seanad) a joint sitting of the members of both houses may, on a resolution passed by the Senate (Seanad), be convened for the purpose of debating, but not of voting upon, the proposals of the bill or any amendment of the same.

Article 38. A bill may be initiated in the Senate (Seanad Eireann) and if passed by the Senate (Seanad) shall be introduced into the Chamber (Dail Eireann). If amended by the Chamber (Dail) the bill shall be considered as a bill initiated in the Chamber (Dail). If rejected by the Chamber (Dail) it shall not be introduced again in the same session, but the Chamber (Dail) may reconsider it on its own motion.

Article 39. A bill passed by either house and accepted by the other house shall be deemed to be passed by both houses.

Article 40. So soon as any bill shall have been passed or deemed to have been passed by both houses, the Executive Council shall present the same to the representative of the Crown for the signification by him, in the King's name, of the King's assent, and such representative may withhold the King's assent or reserve the bill for the signification of the King's pleasure; provided that the representative of the Crown shall in withholding of such assent or the reservation of any bill, act in accordance with the law, practice and constitutional usage governing the like withholding of assent or reservation in the Dominion of Canada.

A bill reserved for the signification of the King's pleasure shall not have any force unless and until within one year from the day on which it was presented to the representative of the Crown for the King's assent, the representative of the Crown signifies by speech or message to each of the houses of the Parliament (Oireachtas), or by proclamation, that it has received the assent of the King in Council.

An entry of every such speech, message or proclamation shall be made in the Journal of each house and a duplicate thereof, duly attested, shall be delivered to the proper officer to be kept among the records of the Irish Free State (Saorstát Eireann).

Article 41. As soon as may be after any law has received the King's assent, the clerk, or such officer as the Chamber may appoint for the purpose, shall cause two fair copies

of such law to be made, one being in the Irish language and the other in the English language, one of which copies shall be signed by the representative of the Crown to be enrolled for record in the office of such officer of the Supreme Court as the Chamber (Dail Eireann) may determine, and such copies shall be conclusive evidence as to the provisions of every such law, and in case of conflict between the two copies so deposited; that signed by the representative of the Crown shall prevail.

Article 42. The Parliament (Oireachtas) shall have no power to declare acts to be infringements of the law which were not so at the date of their commission.

Article 43. The Parliament (Oireachtas) may create subordinate legislatures but it shall not confer thereon any powers in respect of the navy, army or air force, alienage or naturalization, coinage, legal tender, trade marks, designs, merchandise marks, copyright, patent rights, weights and measures, submarine cables, wireless telegraphy, Post Office, railways, aerial navigation, customs and excise.

Article 44. The Parliament (Oireachtas) may provide for the establishment of functional or vocational councils representing branches of the social and economic life of the nation. A law establishing any such council shall determine its powers, rights and duties, and its relation to the Government of the Irish Free State (Saorstát Eireann).

Article 45. The Parliament (Oireachtas) has the exclusive right to regulate the raising and maintaining of such armed forces as are mentioned in the Scheduled Treaty in the territory of the Irish Free State (Saorstát) and every such force shall be subject to the control of the Parliament (Oireachtas).

E. Referendum and Initiative

Article 46. Any bill passed or deemed to have been passed by both houses may be suspended for a period of ninety days on the written demand of two-fifths of the members of the Chamber (Dail Eireann) or of a majority of the members of the Senate (Seanad Eireann) presented to the President of the Executive Council not later than seven days from the day on which such bill shall have been so passed or deemed to have been so passed. Such a bill shall be submitted by referendum to the decision of the people if demanded before the expiration of the ninety days, either by a resolution of the Senate (Seanad Eireann) assented to by three-fifths of the members of the Senate (Seanad Eireann) or by a petition signed by not less than one-twentieth of the voters then on the register of voters, and the decision of the people on such referendum shall be conclusive. These provisions shall not apply to money bills or to such bills as shall be declared by both houses to be necessary for the immediate preservation of the public peace, health or safety.

Article 47. The Parliament (Oireachtas) may provide for the initiation by the people of proposals for laws or constitutional amendments. Should the Parliament (Oireachtas) fail to make such provision within two years, it shall on the petition of not less than 100,000 voters on the register, of whom not more than 20,000 shall be voters in any one constituency, either make such provisions or submit the question to the people for decision in accordance with the ordinary regulations governing the referendum. Any legislation passed by the Parliament (Oireachtas) providing for such initiation by the people shall provide (1) that such proposals may be initiated on a petition of 50,000 voters on the register, (2) that if the Parliament (Oireachtas) rejects a proposal so initiated, it shall be submitted to the people for decision in accordance with the ordinary regulations governing the referendum; and (3) that if the Parliament (Oireachtas) enacts a proposal so initiated, such enactment shall be subject to the provisions respecting ordinary legislation or amendments of the Constitution as the case may be.

Article 48. Save in the case of actual invasion, the Irish Free State (Saorstát Eireann) shall not be committed to active participation in any war without the assent of the Parliament (Oireachtas).

Article 49. Amendments of this Constitution within the terms of the Scheduled Treaty may be made by the Parliament (Oireachtas), but every such amendment must be submitted to a referendum of the people; and shall not be passed unless a majority of the voters on the register record their votes and either a majority of the voters on the register or two-thirds of the votes recorded are in favor of the amendment.

SECTION III.—THE EXECUTIVE

E. Executive Council (Aireacht)

Article 50. The Executive Authority of the Irish Free State (Saorstát Eireann) is hereby declared to be vested in the King, and shall be exercisable, in accordance with the law, practice and constitutional usage governing the exercise of the executive authority in the case of the Dominion of Canada, by the Representative of the Crown. There shall be a Council to aid and advise in the government of

the Irish Free State (Saorstát Éireann) to be styled the Executive Council (Aireacht). The Executive Council shall be responsible to the Chamber (Dail Éireann), and shall consist of not more than twelve Ministers (Ain) appointed by the Representative of the Crown, of whom four Ministers shall be members of the Chamber (Dail Éireann) and a number not exceeding eight, chosen from all citizens eligible for election to the Chamber (Dail Éireann), who shall not be members of Parliament (Oireachtas) during their term of office, and who, if at the time of their appointment they are members of Parliament (Oireachtas), shall by virtue of such appointment vacate their seats; provided that the Chamber (Dail Éireann) may from time to time on the motion of the President of the Executive Council determine that a particular Minister or Ministers not exceeding three may be members of Parliament (Oireachtas) in addition to the four members of the Chamber (Dail Éireann) above mentioned.

Article 51. The Ministers who are required to be members of the Chamber (Dail Éireann) shall include the President of the Executive Council (Uachtarán) and the Vice President of the Executive Council (Tánaistí). The President of the Executive Council shall be the chief of the Executive Council and shall be appointed on the nomination of the Chamber (Dail), and the Vice President of the Executive Council and the other Ministers who are members of Parliament (Oireachtas) shall be appointed on the nomination of the President of the Executive Council; and he and the Ministers nominated by him shall retire from office should he fail to be supported by a majority in the Chamber (Dail), but the President of the Executive Council and such Ministers shall continue to carry on their duties until their successors are appointed.

Article 52. Ministers who are not members of the Parliament (Oireachtas) shall be nominated by a committee of members of the Chamber (Dail Éireann) chosen by a method to be determined by the Chamber (Dail) so as to be impartially chosen with due regard to their suitability for office and should so far as possible be generally representative of the Irish Free State (Saorstát Éireann) as a whole rather than of groups or of parties. Should a nomination not be acceptable to the Chamber (Dail), the committee shall continue to propose names until one is found acceptable.

Article 53. Each Minister not a member of the Parliament (Oireachtas) shall be the responsible head of the Executive Department or Departments as head of which he has been appointed as aforesaid; provided that should arrangements for functional or vocational councils be made by the Parliament (Oireachtas) these Ministers or any of them may, should the Parliament (Oireachtas) so decide, be members of and be nominated on the advice of such councils. The term of office of any such Minister shall be the term of the Chamber (Dail Éireann) existing at the time of his appointment or such other period as may be fixed by law, but he shall continue in office until his successor shall have been appointed; and no such Minister shall be removed from office during his term unless the proposal to remove him has been previously submitted to a committee chosen by a method to be determined by the Chamber (Dail) so as to be impartially representative of the Chamber (Dail) and then only if the committee shall have reported that such Minister has been guilty of malfeasance in office or has not been performing his duties in a competent and satisfactory manner, or has failed to carry out the lawfully expressed will of Parliament (Oireachtas).

Article 54. The Ministers who are members of the Parliament (Oireachtas) shall alone be responsible for all matters relating to external affairs, whether policy, negotiations, or executive acts. Subject to the foregoing provisions, the Executive Council shall meet and act as a collective authority; provided, however, that each Minister shall be individually responsible to the Chamber (Dail Éireann) for the administration of the department or departments of which he is head.

Article 55. Ministers who are not members of the Chamber (Dail Éireann) shall by virtue of their office possess all the rights and privileges of a member of the Chamber (Dail) except the right of vote, and shall, if not members of the Parliament (Oireachtas), comply with the provisions of Article 17 as if they were members of the Chamber (Dail) and may be required by the Chamber (Dail) to attend and answer questions.

Article 56. Should the President of the Executive Council die, resign, or be permanently incapacitated, the Vice President of the Executive Council shall act in his place until a President of the Executive Council shall be elected. The Vice President of the Executive Council shall also act in the place of the President of the Executive Council during his temporary absence.

Article 57. The members of the Executive Council shall receive such remuneration as may from time to time be prescribed by law, but the remuneration of any Minister shall not be diminished during his term of office.

Article 58. The Representative of the Crown, who shall be styled the Governor General of the Irish Free State, shall be appointed in like manner as the Governor General of Canada and in accordance with the practice observed in the

making of such appointments. The salary of the Governor General of the Irish Free State shall be of the like amount as that now payable to the Governor General of the Commonwealth of Australia, and shall be charged on the public funds of the Irish Free State (Saorstát Éireann) and suitable provision shall be made out of those funds for the maintenance of his official residence and establishment.

Article 59. The Executive Council shall prepare the budget of receipts and expenditure of the Irish Free State (Saorstát Éireann) for each financial year and shall present it to the Chamber (Dail Éireann) before the close of the previous financial year.

B. Financial Control

Article 60. All revenues of the Irish Free State (Saorstát Éireann), from whatever source arising, shall, subject to such exceptions as may be provided by law, form one fund, and shall be appropriated for the purposes of the Irish Free State (Saorstát Éireann) in the manner and subject to the charges and liabilities imposed by law.

Article 61. The Chamber (Dail Éireann) shall appoint a Comptroller and Auditor General to act on behalf of the Irish Free State (Saorstát Éireann). He shall control all disbursements and shall audit all accounts of moneys administered by or under the authority of the Parliament (Oireachtas) and shall report to the Chamber (Dail) at stated periods to be determined by law.

Article 62. The Comptroller and Auditor General shall not be removed except for stated misbehavior or incapacity on resolutions passed by the Chamber (Dail Éireann) and the Senate (Seanad Éireann). Subject to this provision the terms and conditions of his tenure of office shall be fixed by law. He shall not be a member of the Parliament (Oireachtas) nor shall he hold any other office or position of emolument.

SECTION IV. THE JUDICIARY

Article 63. The judicial power of the Irish Free State (Saorstát Éireann) shall be exercised and justice administered in the public courts established by Parliament (Oireachtas) by Judges appointed in manner hereinafter provided. These courts shall comprise Courts of First Instance and a Court of Final Appeal to be called the Supreme Court (Cúirt Uachtarach). The Courts of First Instance shall include a High Court (Ard Chúirt), invested with full original jurisdiction in and power to determine all matters and questions whether of law or fact, civil or criminal, and also courts of local and limited jurisdiction with a right of appeal as determined by law.

Article 64. The judicial power of the High Court shall extend to the question of the validity of any law having regard to the provisions of the Constitution. In all cases in which such matters shall come into question, the High Court alone shall exercise original jurisdiction.

Article 65. The Supreme Court of the Irish Free State (Saorstát Éireann) shall, with such exceptions (not including cases which involve questions as to the validity of any law), and subject to such regulations as may be prescribed by law, have appellate jurisdiction from all decisions of the High Court. The decision of the Supreme Court shall in all cases be final and conclusive, and shall not be reviewed or capable of being reviewed by any other court, tribunal or authority whatsoever.

Provided that nothing in this Constitution shall impair the right of any person to petition his Majesty for special leave to appeal from the Supreme Court to his Majesty in Council or the right of his Majesty to grant such leave.

Article 66. The number of Judges, the constitution and organization of, and distribution of business and jurisdiction among the said courts and Judges, and all matters of procedure shall be as prescribed by the laws for the time being in force and the regulations made thereunder.

Article 67. The Judges of the Supreme Court and of the High Court and of all other courts established in pursuance of this Constitution shall be appointed by the Representative of the Crown on the advice of the Executive Council. The Judges of the Supreme Court and of the High Court shall not be removed except for stated misbehavior or incapacity, and then only by resolutions passed by both the Chamber (Dail Éireann) and the Senate (Seanad Éireann). The age of retirement, the remuneration and the pension of such Judges on retirement, and the declarations to be taken by them on appointment, shall be prescribed by law. Such remuneration may not be diminished during their continuance in office. The terms of appointment of the Judges of such other courts as may be created shall be prescribed by law.

Article 68. All Judges shall be independent in the exercise of their functions and subject only to the Constitution and the law. A Judge shall not be eligible to sit in Parliament (Oireachtas) and shall not hold any other office or position of emolument.

Article 69. No one shall be tried save in due course of law, and extraordinary courts shall not be established. The jurisdiction of courts-martial shall not be extended to or exercised over the civil population save in time of war, and for acts committed in time of war, and in accordance with

the regulations to be prescribed by law. Such jurisdiction shall not be exercised in any area in which the civil courts are open or capable of being held, and no person shall be removed from one area to another for the purpose of creating such jurisdiction.

Article 70. A member of the armed forces of the Irish Free State (Saorstát Éireann) not on active service shall not be tried by any court-martial for an offense cognizable by the civil courts.

Article 71. No person shall, save in case of summary jurisdiction prescribed by law for minor offences, be tried without a jury on any criminal charge.

SECTION V. TRANSITORY PROVISIONS

Article 72. Subject to this Constitution and to the extent to which they are not inconsistent therewith, the laws in force in the Irish Free State (Saorstát Éireann) at the date of the coming into operation of this Constitution shall continue to be of full force and effect until the same or any of them shall have been repealed or amended by enactment of the Parliament (Oireachtas).

Article 73. Until courts have been established for the Irish Free State (Saorstát Éireann) in accordance with this Constitution, the Supreme Court of Judicature, County Courts, Courts of Quarter Session and Courts of Summary Jurisdiction, as at present existing, shall for the time being continue to exercise the same jurisdiction as heretofore, and any Judge or Justice, being a member of any such court, holding office at the time when this Constitution comes into operation, shall for the time being continue to be a member thereof and hold office by the like tenure and upon the like terms as heretofore, unless, in the case of a Judge of the said Supreme Court or of a County Court, he signifies to the Representative of the Crown his desire to resign. Any vacancies in any of the said courts so continued may be filled by appointment made in like manner as appointments to Judgeships in the courts established under this Constitution.

Provided that the provisions of Article 65 as to the decisions of the Supreme Court established under this Constitution shall apply to decisions of the Court of Appeal continued by this article.

Article 74.—If any Judge of the said Supreme Court of Judicature or any of the said County Courts resigns as aforesaid, or if any Judge, on the establishment of courts under this Constitution, is not with his consent appointed to be a Judge of any such court, he shall, for the purpose of Article 10 of the Scheduled Treaty, be treated as if he had retired in consequence of the change of government effected in pursuance of the said treaty, but the rights so conferred shall be without prejudice to any rights or claims that he may have against the British Government.

Article 75.—Every existing officer of the Provisional Government who has been transferred to that Government from the British Government, and every existing officer of the British Government who, at the date of the coming into operation of this Constitution, is engaged or employed in the administration of public services which on that date become public services of the Irish Free State (Saorstát Éireann)—except those whose services have been lent by the British Government to the Provisional Government—shall on that date be transferred to and become an officer of the Irish Free State (Saorstát Éireann) and shall hold office by a tenure, and shall be entitled to the benefit of Article 10 of the Scheduled Treaty.

Article 76.—As respects departmental property, assets, rights, and liabilities, the Government of the Irish Free State (Saorstát Éireann) shall be regarded as the successors of the Provisional Government, and, to the extent to which functions of any department of the British Government become functions of the Government of the Irish Free State (Saorstát Éireann), as the successors of such department of the British Government.

Article 77.—After the date on which this Constitution comes into operation, the House of Parliament elected in pursuance of the Irish Free State (Agreement) act, 1922 (being the Constituent Assembly for the settlement of this Constitution), may, for a period not exceeding one year from that date, but subject to compliance by the members thereof with the provisions of Article 17 of this Constitution exercise all the powers and authorities conferred on the Chamber (Dail Éireann) by this Constitution, and the first election for the Chamber (Dail Éireann) under Articles 26 and 27 hereof shall take place as soon as possible after the expiration of such period.

Article 78.—The first Senate (Seanad Éireann) shall be constituted immediately after the coming into operation of this Constitution in the manner following, that is to say:

(a) The first Senate (Seanad) shall consist of two members elected by each of the universities in the Irish Free State (Saorstát Éireann) and fifty-six other members, of whom twenty-eight shall be elected and twenty-eight shall be nominated.

(b) The twenty-eight nominated members of the Senate (Seanad) shall be nominated by the President of the Executive Council, who shall, in making such nominations, have

special regard to the providing of representation for groups or parties not then adequately represented in the Chamber (Dail Éireann).

(c) The twenty-eight elected members of the Senate (Seanad), shall be elected by the Chamber (Dail Éireann) voting on principles of proportional representation.

(d) Of the university members, one member elected by each university to be selected by lot, shall hold office for six years; the remaining university members shall hold office for the full period of twelve years.

(e) Of the twenty-eight nominated members, fourteen, to be selected by lot, shall hold office for the full period of twelve years; the remaining fourteen shall hold office for the period of six years.

(f) Of the twenty-eight elected members, the first fourteen elected shall hold office for the period of nine years, the remaining fourteen shall hold office for the period of three years.

(g) At the termination of the period of office of any such members, members shall be elected in their place in manner provided by Article 31.

(h) Casual vacancies shall be filled in manner provided by Article 33.

(i) For the purpose of the election of members for any university under this article, all persons whose names appear on the register for the university in force at the date of the coming into operation of this Constitution shall, notwithstanding anything in Article 14, be entitled to vote.

Article 79.—The passing and adoption of this Constitution by the Constituent Assembly and the British Parliament shall be announced as soon as may be, and not later than the sixth day of December, nineteen hundred and twenty-two, by Proclamation of the Majesty, and this Constitution shall come into operation on the issue of such proclamation.

History.—In the long annals of Ireland, the year 1922 will ever be considered, of all years, the most dramatic and decisive. On 6 Dec. 1921, there had been signed a treaty of peace between the British government of which David Lloyd George was Prime Minister and certain Irish leaders among whom Arthur Griffith and Michael Collins were the outstanding personalities. By the terms of this treaty, which are set out elsewhere, Ireland was established as a Free State, with the sovereignty of the Dominion of Canada, a constitution of her own, and complete control of her domestic affairs, including finance, currency, defence, education, post office, railways and land purchase. She may apply for a seat in the League of Nations and maintain diplomatic and consular representatives abroad. For one year, the Irish Free State would exist as a provisional government but during that period, elections were to be held and if the treaty were ratified by such a vote of the people, the new Dominion would be formally inaugurated on 6 Dec. 1922. The steps by which this result was achieved may be briefly stated. In 1918, elections had been held after the Armistice, throughout the entire United Kingdom. Those Irish members, however, who belonged to the Sinn Féin Party, had declined to take their seats in the Imperial Parliament at Westminster and had declared themselves an Irish parliament, or Dail Éireann, sitting in Dublin. On 7 Jan. 1922, the Dail Éireann ratified the treaty by 64 votes to 57. Three days later, the Dail Éireann met as the Southern Parliament of Ireland which again ratified the treaty on 14 January. On 16 January, Lord Fitzalan, Ireland's last lord lieutenant and her only lord lieutenant of the Roman Catholic faith, handed over the keys of Dublin Castle to the Provisional Government and there began that evacuation of Ireland by British troops which is now complete. The Bank of Ireland financed the new government with a loan of £1,000,000. In March, the Imperial Parliament, both Lords and Commons, passed the legislation which constitutes the Irish Free

State, the vote in the House of Commons being 295 in favor and 52 against. On 15 June, the text of the Irish Free State constitution was published, and on the next day, elections in Ireland resulted in a majority for the Free State, of 58 members to 36. On 9 September, the new parliament met in Dublin and on the 21st passed the second reading of the constitution bill by 47 votes to 16. On 25 October, that bill completed its final stages in the Southern Parliament. In Great Britain, Andrew Bonar Law had succeeded David Lloyd George as Prime Minister, and on 15 November, a new Imperial Parliament had been elected with a large Conservative majority. This parliament was immediately summoned and, on 4 December, carried the final legislation, necessitated by the Irish treaty. On 6 December, the Irish Free State was thus established, the office of "Chief Secretary to the Lord Lieutenant of Ireland," ceased to be, the Union Jack was superseded by the tricolor—orange, white and green; and Timothy M. Healy, an Irish Nationalist and Roman Catholic, was appointed to be Governor-General. On 18 December, the Irish Parliament, now completely recognized, passed "an Adaptation of Enactments Bill," the first Irish statute to become law in 123 years.

While these complicated formalities were proceeding, Ireland herself was rent by embittered controversy. When the year opened, the president of the Dail Eireann was Eamonn de Valera who had returned from a prolonged visit to the United States where he had sought recognition of Ireland as an independent republic. De Valera joined in the negotiations with the British government but dissented from the treaty. On 4 January, he declared his opposition and when the treaty was accepted by the Dail Eireann, De Valera refused to carry it out and he was succeeded as president by Arthur Griffith, with whom was Michael Collins, as chief executive. Under the treaty, Great Britain had released many political prisoners and De Valera represented a powerful body of republican extremists, including many units of the so-called "irregular army." There was an endeavor to hold the Sinn Fein Party united for the treaty and with this object in view, the elections were postponed for three months. But these conciliatory efforts failed. De Valera was influenced by "an Englishman" called Erskine Childers, who with his wife, a Boston lady of great ability, had espoused the Irish cause. Childers drafted the so-called "Document Two" which was his version of what the treaty should have been. It is, perhaps, enough to compare the oath of allegiance as determined by the treaty with the oath, as drafted by Childers and De Valera:

THE TREATY

I do solemnly swear true faith and allegiance to the Constitution of the Irish Free State as by law established, and that I will be faithful to H. M. King George V., his heirs and successors by law, in virtue of the common citizenship of Ireland with Great Britain and her adherence to and membership of the group of nations forming the British Commonwealth of Nations.

THE ALTERNATIVE

I do swear to bear true faith and allegiance to the Constitution of Ireland and the Treaty of Association of Ireland with the British community of nations and to recognize the King of Great Britain as head of the Associated States.

To the Irish Republicans, any form of allegiance to Great Britain or her king was repugnant, and in deference to this sentiment, the Sovereign did not call upon Mr. Healy to "kiss hands" on his appointment as Governor-General. By the reprisals, inflicted on Ireland before the treaty was negotiated, deep feelings against Britain had been aroused, and it was argued by the dissentients that the treaty was only accepted by the Irish delegates in London under threats of further military repression on the part of the special troops, known as "Black and Tans." Another and profound disappointment to the Republicans was the loss, under the treaty, of the six counties in eastern Ulster which include Belfast. By boycott and various methods of penetration, Sinn Fein had hoped to compel these counties to throw in their lot with the rest of Ireland, but in Belfast, a separate Parliament had been opened in state by the King; the six counties still send their members to the Imperial Parliament at Westminster; and in December, they exercised their option to remain outside the Irish Free State. The Governor-General of Northern Ireland is the Duke of Abercorn, a Conservative and a landlord, while the Prime Minister is another Conservative, Sir James Craig. The first of the tasks to be faced by Collins and Griffith was thus to abate the quarrel between Northern and Southern Ireland. The employers of Belfast, who as a rule are Protestants, were accused of discriminating against Catholic workers and there were also inflammatory disorders along the still unsettled border. In March, there were negotiations which, on the whole, enabled the two Irish States to reach a *modus vivendi*. But there remains the practical difficulty of dealing with customs in a divided Ireland. On land, the border is 225 miles long. It is crossed by at least 20 lines of railway. And in eight miles, one of these lines crosses the border six times. Owing to the troubles, it was not possible to take the usual decennial census, falling due in 1921, but in 1911, the population of Ireland was 4,390,219. About 1,200,000 of these inhabitants live in northern Ireland, that is, the six counties, as delimited, leaving to the Free State a population of little more than 3,000,000—so grave as this are the practical inconveniences of the partition. In the Irish elections, de Valera suffered a decisive reverse. In his own constituency, Erskine Childers himself obtained but a small vote. The Republicans, therefore, had two courses open to them—the first was to take their seats in the new Dail Eireann and form the regular parliamentary opposition; the second was, if a term familiar in Indian politics may be applied, to "non-co-operate." This latter was the course adopted. De Valera and his followers left the Dail Eireann severely alone and the opposition there consists of Labor, led by Tom Johnson, on law-abiding lines. As stated in his manifestos, the position of De Valera was that the only authority to be recognized in Ireland is the republic of which he was "President," that the Dail Eireann, existing on 1 Jan. 1922, still exists, that the Free State and its courts of law were an usurpation and that the Free State army is in rebellion against Ireland's independent sovereignty. In April, it was evident that serious disorders must be ex-

pected and after that month, civil war rapidly developed. Railways, roads, bridges and telegraphs were destroyed. Banks, post offices and mails were robbed. Retail stores were often looted and many private houses burned to the ground. In November, the estimate of damage was no less than £10,000,000, a figure which seems scarcely credible. The insurgents have had to be driven from Limerick, Waterford and Cork, while in Dublin, one of the glories of the city, the Four Courts, with its irreplaceable records, was seized by irregulars, under the leadership of Roderick or "Rory" O'Connor and Liam Mellows. The building was besieged by Free State troops, and on 30 June, it fell, but only after destruction by fire. The war has included many personal tragedies. Field Marshall Sir Henry Wilson, a member of the British Parliament and one of Britain's leading generals during the war, had been appointed military adviser to Northern Ireland. On 22 June, he was shot on his doorstep in London. With great solemnity, he was buried in Saint Paul's cathedral, near Wellington and Nelson. The young men, Reginald Dunn and Joseph O'Sullivan who committed the murder were hung. In August, Arthur Griffith, the president of the Irish Free State, died of influenza. It was he who, more than any man, had thought out the Sinn Féin policy and recommended it to the Irish People. By that time, De Valera was again "on the run," that is in hiding, and in an attempt to escape arrest, his secretary, Harry Boland, well-known in the United States, was fatally wounded. On 21 August, the Republicans avenged him. Michael Collins was ambushed and slain near Bandon. In November, the leader of the ambush, Tom Hales, was himself captured, but it was too late to undo his deed. The world was the more deeply stirred by the death of Collins because it had just been announced that he was betrothed to Miss Kitty Kiernan, a charming girl, whose home was in County Longford. Griffith and Collins were succeeded by W. T. Cosgrave as president of the Dail Eireann, and Richard Mulcahy as minister of defense.

The Irish Free State was now fighting for its existence. After the assassination of Sir Henry Wilson, the British government had suggested that measures against the irregulars must be taken. Not less insistent was the Roman Catholic hierarchy. On 10 October, the bishops met at Saint Patrick's College, Maynooth, and declared that "the killing of national soldiers is murder before God." Those who took part in the disorders "are guilty of the gravest sins and may not be absolved in confession or admitted to Holy Communion." Priests sympathizing with the irregularity would be "false to their sacred office and guilty of the gravest scandal" and were threatened with suspension. On the 19th, the Pope addressed to King George a personal message in which he supported peace. On 18 September, Archbishop Michael I. Curley of Baltimore issued a manifesto, denouncing "De Valera and his wreckers." A decision was also reached on the question whether the consolations of religion should be extended to hunger strikers. On 4 November, Mary MacSwiney, the sister of Terence

MacSwiney, lord mayor of Cork, who, in 1920, had starved himself to death in a London prison, was herself arrested by the Irish Free State. She also went on hunger strike in Mountjoy Prison, Dublin, and her sister, Annie, commenced a similar ordeal at the prison gates. In Washington, D. C., Mrs. Terence MacSwiney was arrested for picketing the British Embassy, but was quickly released; while the American Association for the Recognition of the Irish Republic picketed the British Consulate in New York. To Mary MacSwiney, the sacraments were refused, and Father Dominic O'Connor, spiritual adviser to Terence MacSwiney, when in prison, was ordered to undertake mission work in Central Oregon. Neither of the sisters of MacSwiney was permitted to die.

Early in October, the Free State offered complete amnesty to those rebels who should surrender their arms before the 14th day of that month. The Republicans ignored this offer, and on 10 November, at Wicklow, Erskine Childers was captured, with firearms on him. The Dail Eireann had authorized the military tribunals to punish all such offenders with death. By appealing to the British law of habeas corpus, an attempt was made, not however with his consent, to save Childers, who to the end claimed that he was no Englishman, but Irish. On the 24th he was executed and the Dail Eireann supported the authorities responsible for this stern action. To Winston Churchill, Erskine Childers was, like Roger Casement, a "mischievous murderous renegade." He was certainly a man who, like Casement, had eaten England's salt, yet his career was illuminated with a certain romantic heroism. Born in 1870 he was educated at Haileybury and Trinity College, Cambridge. Against Germany, he served in the Royal Navy Air Service and was decorated with the Distinguished Service Cross. At one time, he was a clerk of the House of Commons—a post of great honor in the civil service—and his book 'The Riddle of the Sands' aroused Britain to the German peril. He contributed more over the fifth volume to the 'Official History of South Africa.' Like Parnell, he had Protestant Irish blood in his veins, and it was he who, in his yacht, conducted the famous gun-running venture into Lowth. His uncle was Chancellor of the Exchequer in Gladstone's government of 1880, and his wife, a daughter of Dr. Hamilton Osgood of Boston, belongs to the family of John Hancock who signed the Declaration of Independence. A confirmed invalid, she exercised an influence over the Republicans in Ireland which was the more powerful because it was unobtrusive.

It was amid many disorders, therefore, that the Irish Free State was brought to the birth. The ceremonial was reduced to the utmost simplicity and was marred by further assassinations. Deputy Sean Hales, said to be brother of Tom Hales, the irregular, who led the ambush against Collins, was a Free Stater. On his way to the Dail Eireann, he was shot dead in the streets of Dublin, and Padraic O'maille, chairman of the Dail, was wounded. The houses of deputies and of officials were burned. As deterrent reprisals, the government, on 8 December, immediately executed four rebels, held in prison.

of whom two, Rory O'Connor and "General" Liam Mellows had been captured in the Four Courts. On 19 December, a further seven men were executed for wrecking trains.

Not the least remarkable feature of the outrages was the sympathy of many women with the extremists. Immune from search, there were girls who carried arms for the irregulars to use in their desperate guerilla warfare. Among the wilder ideas, against which there had to be safeguards, was a plot to kidnap the whole Dail.

As the year closed, there came, with Christmas, a hope of peace. About 10,000 prisoners crowded the jails, but of these, 264, who swore allegiance to the Irish Free State, were released. In Dublin, De Valera was seen attending mass and it is a question whether attempts to arrest him were seriously intended. The Free State Senate, which contains many important and intellectual Irish men and women—for instance, the poet, W. B. Yeats—has appointed a committee to examine the chances of a reconciliation. The widow of John Richard Green, the historian, is among the instigators of this effort.

In the United States, the affairs of Ireland usually create a certain repercussion. From the Irish consulate in New York, Joseph Connolly resigned in November as a protest against repressive measures by the Free State. Mr. Lindsay Crawford, a Canadian lawyer, is now consul and his status is assailed by followers of De Valera who deny the sovereignty of the government in Dublin. In the Supreme Court of New York, the Irish Free State has applied for an injunction restraining De Valera from drawing on Irish funds, here collected and said to amount to \$2,000,000 or more. A trustee of these funds is Stephen O'Mara, now imprisoned by the Free State, and Justice Mullan has ruled that the injunction will be dismissed unless O'Mara is spared as a witness.

The Free State is confronted by the most formidable domestic problems. The railways are to be consolidated and, in a measure, rebuilt. Housing, education, land purchase await attention. And the disorders have, for the moment, wrecked Irish finance. An army of 30,000 men is costing \$30,000,000 a year, and unemployment has reached the British scale. For some weeks, a postal strike disorganized business and there have been other labor disputes. The expenditure is estimated at \$135,000,000—equivalent to \$4,500,000,000 for the population of the United States, and this does not include interest on Ireland's share of the national debt of the former United Kingdom. A formidable deficit is anticipated and a large loan is essential.

PHILIP WHITWELL WILSON.

IRON AND STEEL. The iron ore mined, in the United States in 1922, exclusive of ore containing more than 5.5 per cent of manganese, was estimated at 46,963,000 gross tons, an increase of 60 per cent as compared with that mined in 1921. The ore shipped from the mines in 1922 was estimated at 50,046,000 gross tons, valued at \$158,222,000 an increase of 88 per cent in quantity, and of 76 per cent in value, as compared with the figures for 1921. The average value of the ore, per gross ton, at the mines in 1922 was estimated at \$3.16; in 1921 it was \$3.37. The stocks of iron ore at the mines, mainly in

Michigan and Minnesota, apparently decreased 23 per cent from 13,836,267 gross tons in 1921, to 10,699,000 tons in 1922.

These estimates, based on preliminary figures furnished by producers of 98 per cent of the normal output of iron ore, were made by Hubert W. Davis, of the United States Geological Survey, Department of the Interior. They show the totals for the principal iron-ore producing States, and, by grouping together certain States, the totals for the Lake Superior district and for groups of southeastern and northeastern States.

About 86 per cent of the iron ore shipped in 1922 came from the Lake Superior district, in which 39,602,000 gross tons were mined, and 43,095,000 tons were shipped, increases of about 58 and 89 per cent, respectively, as compared with the quantities mined and shipped in 1921. The ore shipped in 1922 was valued at \$145,150,000, a value increase of about 78 per cent. These totals include the ore mined and shipped from the Mayville and the Baraboo mines, in Wisconsin, and ore shipped by rail as well as by water from all mines, but do not include manganese ores that contained more than 5.5 per cent manganese. The ore is chiefly hematite. The stocks of iron ore in this district apparently decreased from 12,574,457 gross tons in 1921 to about 9,034,000 tons in 1922, or approximately 28 per cent. The shipments of iron ore by water from the Lake Superior district in 1922 (including manganese iron ore), according to figures compiled by the Lake Superior Iron Ore Association, amounted to 42,613,184 gross tons, an increase of 91 per cent as compared with such shipments in 1921. The average value of the ore at the mines in the Lake Superior district in 1922 per gross ton, was \$3.75; in 1921 it was \$3.58.

The mines in Minnesota furnished 70 per cent of the total amount of iron ore shipped from the Lake Superior district in 1922, and 60 per cent of the total for the United States. The mines in Michigan furnished 29 per cent of the Lake shipments, and 25 per cent of the grand total.

The Southeastern States, which constitute the second largest iron-ore producing area, including the Birmingham and Chattanooga districts, mined 5,384,000 gross tons of iron ore in 1922, an increase of 80 per cent as compared with 1921. The shipments of ore from these States to blast furnaces in 1922, amounted to 5,372,000 gross tons, valued at \$9,901,000, an increase in quantity of 84 per cent and in value of 85 per cent as compared with the quantity and value of shipments in the preceding year. The ore contains about 78 per cent of hematite, 21 per cent of brown ore, and 1 per cent of magnetite. The average value of the ore in these States in 1922, per gross ton, was \$1.84; in 1921 it was \$1.83.

The Northeastern States, which include New Jersey, New York and Pennsylvania, in 1922 mined 1,413,000 gross tons of iron ore, and shipped 1,015,000 gross tons, an increase of 109 per cent in the quantity mined and of 113 per cent in the quantity shipped in 1921. The average value of the ore in these States in 1922, per gross ton, was \$2.03; in 1921 it was \$3.75. Most of this ore is magnetite.

The imports of iron ore, from 1 January to

IRON AND STEEL

1 Sept. 1922, amounted to 684,387 gross tons, valued at \$2,894,496, or an average of \$4.23 a ton. The imports for the year 1921 were 315,768 gross tons, valued at \$1,075,909, or \$3.41 a ton. The exports of iron ore for the eleven months ending 30 Nov. 1922, amounted to 602,095 tons, valued at \$2,770,160, or \$4.60 a ton, as compared with exports for the entire year 1921 of 440,106 tons, valued at \$2,077,620, or an average of \$4.72 a ton. The statistics of imports and exports were compiled from the records of the United States Bureau of Foreign and Domestic Commerce of the Department of Commerce.

The production in 1922 of coke and anthracite, pig iron and blast-furnace ferroalloys, according to the *Iron Age*, was 26,880,383 gross tons, an increase of 62 per cent over the output in 1921, which was 16,543,686 gross tons.

The following table shows the quantity and value of the iron ore mined and shipped in the United States by the principal producing States. The figures for 1921 are final, but those for 1922 are subject to revision.

ESTIMATE OF IRON ORE MINED AND SHIPPED IN THE UNITED STATES IN 1922 AND ACTUAL OUTPUT IN 1921.

DISTRICT	Ore mined (gross tons)		Ore shipped			
			1921		1922	
	1921	1922	Gross tons	Value	Gross tons	Value
LAKE SUPERIOR						
Michigan.....	7,075,204	10,402,000	5,011,804	18,481,225	12,361,000	43,745,000
Minnesota.....	17,811,325	28,599,000	17,648,603	62,780,754	29,952,000	98,980,000
Wisconsin.....	257,014	601,000	117,755	300,954	782,000	2,425,000
	25,143,543	39,602,000	22,778,162	81,562,933	43,095,000	145,150,000
SOUTHEASTERN STATES						
Alabama.....	2,876,141	5,184,000	2,835,761	5,058,161	5,170,000	9,325,000
Georgia.....	5,556	200,000	4,205	14,937	202,000	576,000
North Carolina.....	2,583					
Tennessee.....	25,709					
Virginia.....	74,021		54,353	196,935		
	2,984,010	5,384,000	2,919,538	5,338,759	5,372,000	9,901,000
NORTHEASTERN STATES						
New Jersey.....	58,589	93,000	115,132	551,688	76,000	351,000
New York.....	469,988	544,000	174,368	946,366	159,000	764,000
Pennsylvania.....	146,649	776,000	187,062	288,955	780,000	941,000
	675,226	1,413,000	476,562	1,787,009	1,015,000	2,056,000
Other States.....	479,911	564,000	478,266	1,056,607	564,000	1,115,000
Grand total.....	29,282,690	46,963,000	26,652,528	\$89,745,308	50,046,000	\$158,222,000

Steel Ingots.—According to the American Iron and Steel Institute, the production of steel ingots in the United States in 1922 by 30 companies, which in 1921 produced 87½ per cent of the country's total output, was 29,116,453 gross tons as compared with the 1921 production of 16,826,946 gross tons. Open-hearth production in 1922 totaled 23,624,404 gross tons as compared with 13,125,578 gross tons in 1921. Bessemer production totaled 5,469,213 gross tons in 1922 as compared with 3,679,682 gross tons in 1921. The production of all other kinds of ingots was 22,836 gross tons in 1922 as compared with 21,686 gross tons in 1921. The highest monthly output of all kinds of steel ingots in 1922 was in November when the 30 companies produced 2,889,297 tons; January

was the month of lowest production, the output being 1,593,482 tons. The world production of steel ingots in 1922 was estimated by the Boston *News Bureau* at approximately 59,000,000 tons as compared with 39,245,000 tons in 1921 and 71,521,000 tons in 1913. The output of all of the companies in the United States was estimated, by the authority referred to above, at 33,500,000 tons; the output of the United Kingdom at 6,110,000 tons; Germany's output at 8,500,000 tons; Luxemburg's at 1,420,000 tons; France's at 4,500,000 tons; Belgium's at 1,500,000 tons; all other countries, except Canada and Russia, at 3,000,000 tons. Canada's actual production was reported as 463,113 tons as compared with 645,075 tons in 1921. In 1913 Russia, the 1922 production of which country is not included in the above figures, produced 4,837,000 tons.

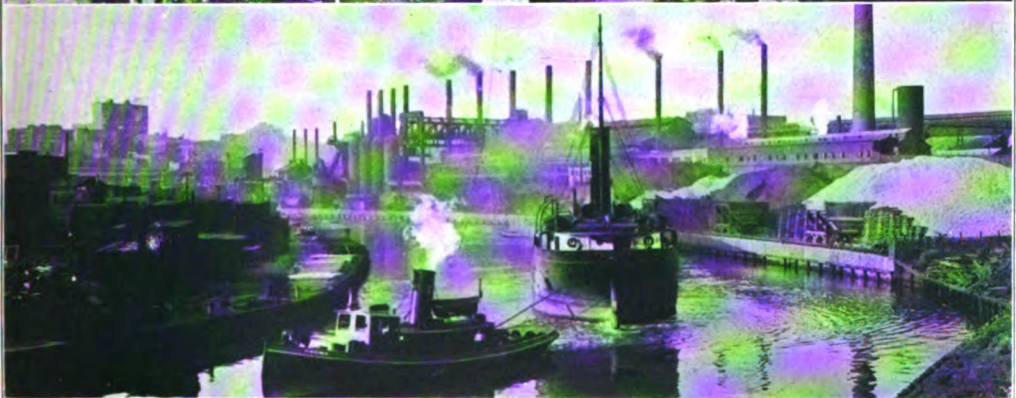
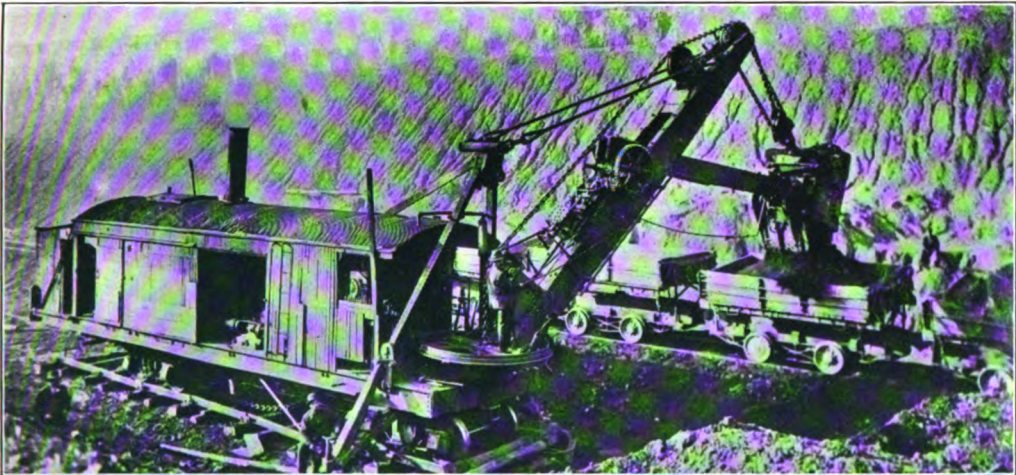
According to the Census Bureau's estimate, fabricated structural steel sold in the United States during 1922 totaled 1,929,400 tons compared with 997,200 tons in 1921. The 1922 sales amounted to 64.3 per cent of the shop capacity

of the country while the 1921 sales amounted to only 35.1 per cent of shop capacity.

The *Iron Age* estimated that the railroads took about 22 per cent of the rolled steel manufactured in the United States in 1922; building and other construction, 15 per cent; oil, gas, water and mining 10 per cent; automobiles, 10 per cent; agriculture, 4 per cent; food containers, 4 per cent; exports, 7 per cent. All other uses, 28 per cent. Shipbuilding took less than 1 per cent.

While the year 1922 did not show great profits for most steel companies, it was by no means unsatisfactory considering the outlook at the beginning of the year. The actual production for 12 months was estimated at only 64 per cent of capacity. Operations showed con-

IRON AND STEEL



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1. Iron ore mining (open pit or strip method) in Minnesota
2. Open hearth steel furnace, Bethlehem Steel Company
3. One of the furnaces of the Cleveland Steel Company

tinued expansion from 1 Jan. 1922, when they were only a little more than 30 per cent, until, even in spite of the coal strike, mills were running at between 75 and 80 per cent by the middle of June. The shopmen's strike blocked transportation of already limited fuel supplies, and caused sharp curtailment of operations which resulted in lowering production to less than 50 per cent about the middle of August. It is worthy of note, however, that at the beginning of the year 1923, operations were approximately 80 per cent, a figure which they had reached about the middle of November 1922. On 1 Dec. 1922 there were 242 iron furnaces in blast (the largest number of the year), as compared to 125 at the beginning of the year. Between these two extremes the number had fluctuated, reaching 192 on 1 July and dropping to 144 on 1 September.

EXPORTS OF IRON AND STEEL FROM THE UNITED STATES IN 1922.

ARTICLES	Tons
Structural shapes, plain material.....	137,292
Steel rails.....	279,865
Boiler tubes and welded pipe.....	171,391
Iron and steel bars, and rods other than wire..	178,827
Plates, iron and steel.....	100,993
Ingots, blooms, billets, sheet bars, and skip..	107,243
Plain wire.....	112,551
Galvanized sheets.....	109,318
Tinplate, terneplate, etc.....	76,608
Black steel sheets.....	214,917
Barbed wire and woven-wire fencing.....	73,717
Structural materials, fabricated.....	47,223
Hoops, bands, and strip steel.....	34,511
Rail fastenings, switches, frogs, etc.....	38,231
Pig iron, not including ferro-alloys.....	30,930
Cast-iron pipe and fittings.....	35,151
Wire nails.....	55,020
Scrap.....	63,770
Car wheels and axles.....	17,556
Bolts, nuts, rivets, and washers, except track..	18,096
Wire rods.....	40,424
Wire n. e. s. and manufactures thereof.....	16,479
Black iron sheets.....	11,694
Iron castings.....	10,190
Nails, other than wire, including tacks.....	8,406
Alloy-steel bars.....	6,456
Wire rope and cable.....	4,585
Ferrosilicon.....	689
Forgings.....	2,171
Steel castings.....	2,215
Horseshoes.....	987
Wire cloth and screening.....	1,527
Insulated wire cable.....	911
Ferromanganese.....	1,107
Machine screws.....	228
Total.....	2,011,276

UNITED STATES EXPORTS OF STEEL TO PRINCIPAL COUNTRIES FOR 1922.

COUNTRIES	Tons
Japan.....	613,140
Canada.....	520,338
Cuba.....	89,116
Mexico.....	85,168
Argentina.....	79,512
China.....	73,056
United Kingdom.....	60,110
Brazil.....	56,747
Philippines.....	44,348
Australia.....	43,609
British India.....	36,769
Colombia.....	31,424
Chile.....	29,898
Peru.....	24,539
Hongkong.....	23,211
China.....	19,602
Kwangtung (leased territory).....	18,981
Honduras.....	15,518

Steel prices at the end of 1922, according to *The Journal of Commerce and Commercial Bulletin* (New York) were 18 per cent higher than at the beginning and were 44 per cent higher than the 10-year pre-war average. The calculations, it was stated, were based on a composite steel price of bars, beams, plates, wire, rails, black pipe and black sheets, which products constitute 88 per cent of the finished steel output of the United States. The composite price at the end of the year was 2.439 cents a pound at Pittsburgh, compared with 2.062 cents at the start of the year and compared with 1.689 cents a pound for the 10-year pre-war average. "This," asserts the publication referred to, "was a modest increase when it is remembered that a 20 per cent advance in wages took place on 1 September and that coke prices are to-day (30 December) three times the prices on January 1." Pig iron prices also proved variable during the year 1922. Eastern Pennsylvania iron practically doubled in price, running up the scale from \$18 to \$34 a ton, and then dropping to \$27 a ton as the year closed. The industry was severely shaken by the "twin strikes," the shortage of fuel brought on a scarcity of pig iron, and an extensive importation of foreign iron took place for the first time since 1901. Foreign prices were set at from \$2 to \$8 a ton lower than domestic, and sales of foreign iron reached a figure of about 400,000 tons.

Iron and Steel Exports.—Exports of iron and steel from the United States in 1922 were composed principally of steel rails; black steel sheets; iron and steel bars, and rods other than wire; boiler tubes and welded pipe; structural shapes, plain material; plain wire, galvanized sheets; semi-finished steel; and iron and steel plates. Details of the shipments during the year are presented in the preceding table.

"Much less dependence on foreign sources of raw and semi-finished iron and steel than in 1921 and a considerably stronger place in the export markets" is a simple statement of the iron and steel trade for 1922. First rank in export steel trade goes to Great Britain for the year. It is an accomplishment in the face of America's huge productive and export capacity and in spite

INTERNATIONAL TRADE IN IRON AND STEEL.

COUNTRIES	1913	1921	1922
EXPORTS	Tons	Tons	Tons
Great Britain.....	4,969,000	1,696,900	3,401,100
Germany.....	5,664,000	2,110,000	2,343,500
United States.....	2,746,000	2,217,800	1,916,400
France.....	378,000	1,529,900	1,770,600
Belgium.....	1,546,000	903,600	1,311,900
Total exports.....	15,503,000	8,458,200	10,743,500
IMPORTS	Tons	Tons	Tons
Germany.....	284,000	621,400	1,750,000
Great Britain.....	2,231,000	1,640,000	881,800
France.....	155,000	434,800	650,000
Belgium.....	827,000	514,200	475,000
United States.....	245,000	83,900	360,000
Total imports.....	3,742,000	3,294,300	4,116,800

¹ Includes Luxemburg from 1 July 1922.

of Continental competition. The preceding tabulation of official British foreign-trade figures and estimates for the other leading countries compiled by the United States Department of Commerce gives the trade situation in summary (quantities in long tons).

Great Britain's first rank in tonnage among exporting countries was due in some measure to the greater overseas buying of pig iron, by the United States chiefly among other customers, in the last six months of the year.

Imports of iron and steel into Japan during the first ten months of 1922, according to the United States Department of Commerce, were: 1,305,633 tons, as compared with 718,441 tons purchased from foreign countries during the corresponding period, 1921. See also **METALLURGY**.

IRVING FEMALE COLLEGE, a non-sectarian educational institution for women, founded in 1856, chartered in 1857 and located at Mechanicsburg, Pa. In 1922-23 it had a faculty of 20 members, 100 students, property valued at \$100,000 and an income of about \$45,265. E. E. Campbell, A.M., Ph.D., is president.

ISTRIA, a peninsula extending from Trieste to the Adriatic Sea, formerly a crownland of Austria-Hungary but since the Great War annexed to Italy. It has an area of 2,035 square miles and a population of 404,309. Nearly one-half of the inhabitants are Croatian, about 40 per cent are Italian and the remainder German.

ITALIAN SOMALILAND, a colony and three protectorates on the east coast of Africa, extending from British Somaliland to the course of the Juba. The area is 139,430 square miles with a population of about 650,000. The protectorates are: the sultanate of the Mijertins from Bender Ziade, on the Gulf of Aden to Cape Gabbee on the Indian Ocean. There is an Italian Resident Commissioner at (1) Alula, the capital; (2) the territory of the Nogal from Cape Gabbee to Cape Garad and (3) the sultanate of Obbia from Cape Garad to the northern boundary of the colony of Benadir, now officially called Southern Italian Somaliland, which extends to the embouchure of the Juba. Mogadisho is the capital of the colony, which is administered by a civil governor. Agriculture and cattle raising are the chief occupations of the people. Exports in 1920 were valued at 17,623,109 lire and imports at 28,447,389 lire. The chief imports are cottons, sugar, oil, rice, lumber and yarns. The chief exports are dura, Indian corn, butter, gum, cotton and hides. There are 1,135 miles of roads in the colony. The budget for 1922 forecast an expenditure of 12,992,000 lire to be met by revenue of an equal amount. There are 13 wireless stations in the colony and the station at the capital communicates with Italy. There is good steamer service with Italy and also with Port Durban. The Governor in 1922 was Carlo Riveri.

ITALY, a kingdom of southern Europe comprising Italy proper, the islands of Sardinia, Sicily and Elba and several lesser islands.

Area and Population.—The area of the kingdom previous to the World War was 110,632, but to this must be added 7,350 square miles of former Austrian lands which became Italian

after the war. Italy had a population of 40,070,161 in 1921. The population is very nearly perfectly homogeneous. There are about 85,000 of French origin, 10,000 of Teutonic ancestry, 30,000 Greeks, 80,000 Albanians, 42,200 Slavs and 12,000 Spaniards. There were 754,685 births in the country in 1919 and 677,040 deaths. In 1920 the total number of emigrants was 344,208, of whom 153,717 went to other European countries and 190,491 to countries overseas. In the same year 52,678 Italians returned to their native land from the United States. The capital is Rome, which has a population of 590,960. The largest city of the kingdom is Naples with 697,917, followed by Milan with 663,059. Other large cities are Turin (451,994); Palermo (345,891); Genoa (300,139); Florence (242,147); Catania (217,389); Bologna (189,770); Venice (168,038); Messina (150,000); Leghorn (108,585); Bari (109,218); Padua (105,135); Ferrara (102,550).

Religion.—The ruling state religion is the Roman Catholic but there is granted to all recognized denominations full freedom of worship. The latest religious census showed 32,983,664 Roman Catholics, 123,253 Evangelical Protestants and 34,324 Jews. About 1,500,000 did not profess any religion. The Roman Catholic Church has one patriarchate, 49 archbishoprics, 6 cardinal bishops, 216 bishoprics, 11 abbots and a number of prelates without territorial jurisdiction.

Education.—Public schools of every grade are regulated and maintained by the state. There are lower grade and higher grade primary schools. Instruction is free in both classes of schools but in those communes where there is but a lower grade primary school the age limits are from six to nine, while in the larger communes the age limit is extended to 12 years. Secondary education is of two kinds—classical and technical. The gymnasias and the lycees furnish the former and the technical schools and institutes the latter. Higher education is supplied by the universities and the special higher institutes and schools. At last report there were in Italy 136,968 elementary schools of all kinds with 96,443 teachers and 4,523,183 pupils. There were 1,903 secondary schools of all kinds with 326,787 students. There are 17 state universities with 36,765 students; four free universities with 1,162 students and three institutions of university rank. The higher institutes of commercial education have 4,000 students; the higher schools of agriculture have 800 students; the five engineering colleges have 6,100 students; and in other special schools there are about 1,800 students.

Finance.—The public debt of Italy on 30 April 1922, as given in a report of the Parliamentary Finance Commission, was as follows:

	Lire
Pre-war debt	13,453,600,000
National loans	35,816,100,000
Foreign loans	21,361,500,000
Long-term treasury bonds	6,796,800,000
Ordinary treasury bonds	26,037,000,000
Bank circulation for account of the state ..	8,359,800,000
Government bank notes in circulation	2,267,000,000
Interest-bearing accounts in state deposit and loan banks	487,700,000
Total	114,579,500,000

Foreign Loans	Lire
Indebtedness to Great Britain.....	12,687,173,200
Indebtedness to the United States.....	8,586,816,383
Indebtedness for bonds sold in the United States.....	51,694,069
Indebtedness to Brazil.....	35,742,000
Total.....	21,361,425,652

During the 1921-22 fiscal year the Italian treasury paid off entirely its indebtedness to the Canadian, Swedish and Dutch governments, and part of its indebtedness to the Brazilian government. The lire equals at normal \$0.193.

The total ordinary revenues of the Italian government for the fiscal year 1921-22 were 12,695,000,000 lire, an increase of 1,262,000,000 lire over the preceding year. Despite the increases in revenue and over original estimates, the deficit for the year 1921-22, set as 5,000,000,000 lire on 31 Dec. 1921, actually amounted to 6,581,000,000 lire.

Agriculture.—The Bureau of Agricultural Statistics of the Italian Ministry of Agriculture gave the area under wheat in Italy in 1922 at 11,587,100 acres and the yield at 162,404,468 bushels. The area sown to Indian corn was 3,706,600 acres with a yield of 44,466,000 centals or hundredweights. The area planted with vines was 10,423,100 acres, the vintage from which was 725,800,000 gallons. Oats were planted to 1,200,000 acres and yielded 10,032,000 centals. There were 5,730,000 acres under olives, the yield from which was 345,000,000 gallons of oil. The last livestock report showed 6,239,000 head of cattle, 11,753,900 sheep, 3,082,000 goats, 2,338,926 swine, 989,780 horses, 949,162 asses and 496,743 mules. Silk culture is carried on all over Italy but is centered in Lombardy, Piedmont and Venetia. The silk cocoon crop of 1921 was 3,000 tons. There are 670 silk spinning mills and 164 silk weaving mills. There are 35 beet-sugar factories, with an output averaging 170,000 tons annually.

The value of all forest products is about 75,000,000 lire annually.

Mining Industries.—There are 67,000 workers employed in the mining industries of the country, the output of which was valued at 644,798,281 lire in 1920. Mineral fuel led with 1,739,922 metric tons from 201 mines valued at 244,306,997 lire. Sulphur ore was second with 296,099 tons from 453 mines valued at 172,700,720 lire. Other minerals in order of importance were zinc and lead, mercury, iron, manganese, boric acid, copper and antimony. The quarries furnish employment to 46,000 persons and turn out building and decorative stone to the value of 90,000,000 lire annually.

Fisheries.—There are 165,000 persons engaged in the fisheries, employing 26,000 craft of all sizes with an aggregate tonnage of 72,000. The value of the annual catch is about 33,000,000 lire.

Manufactures.—The last industrial census reported 243,000 establishments of factory grade in the country employing 2,304,438 persons and possessing 1,620,404 horse power. The largest class of industrial establishments was of those connected with the products of agriculture and fisheries. These numbered 135,461 with 640,856 employees. There were 58,836 metal and metal-

working factories with 695,737 employees; 32,691 textile works with 656,733 employees; 5,661 chemical establishments with 100,924 employees and 5,309 establishments connected with the public services with 76,788 employees.

Commerce.—During the first eight months of 1922 Italy's exports averaged 700,000,000 lire monthly; her imports 1,240,000,000 lire monthly. In December imports rose to 1,916,000,000 lire while exports amounted to 1,010,000,000 lire.

Shipping.—At the beginning of 1922 the merchant marine of Italy consisted of 825 steam vessels of 3,129,803 tons and 4,464 sailing vessels of 261,769 tons.

Communications.—The total length of the Italian railways is 9,741 miles, of which 8,761 miles are the property of the state. Receipts of the state lines average 2,000,000,000 lire while the expenditures average 3,000,000,000 lire, leaving an average annual deficit of approximately 1,000,000,000 lire. Reorganization has become urgent as a result of these deficits over a period of several years. Plans have been considered by the Italian State Railway Director for the electrification of lines where the traffic is heavy and grades are sufficiently long to cause wasteful coal consumption under present steam operations. At the end of the year 1922 there were 756 kilometers of the state lines electrified (kilometer equals 0.62137 mile). An additional 4,224 kilometers are being electrified. There are 11,228 post-offices; 35,205 miles of telegraph lines; 10,017 telegraph offices; 324 urban telephone systems and 111,719 subscribers. The telephone system is the property of the state since 1907.

Army.—Military service is compulsory and universal, beginning with the 20th year and ending with the 39th. The establishment of the active army in 1921 was 250,000 men.

Navy.—There are five vessels of the Dreadnought class, three armored cruisers, 18 scout cruisers and flotilla leaders, two torpedo gunboats, 65 destroyers, 91 torpedo boats and 46 submarines in the Italian navy. The personnel consists of 1,000 officers and 40,000 men.

Government.—According to the Statuto Fondamentale del Regno the executive power belongs exclusively to the sovereign, who exercises it through responsible ministers. The legislative authority rests jointly with the King and Parliament. The latter consists of two chambers, a Senate and a Chamber of Deputies. The Senate is made up of the princes of the royal house and of the appointees of the King. There are at present 368 senators and nine members of the royal house. In the lower chamber there are 535 deputies, who must be at least 30 years of age, must not be in receipt of any salary from the government nor be a minister of religion. The reigning King in 1922 was Vittorio Emanuele III, who succeeded to the throne on the death of his father, 29 July 1900. The President of the Council and Minister of the Interior from 25 Feb. 1922 to 29 Oct. 1922 was Signor Luigi Facta, who was succeeded on the latter date by Benito Mussolini, the leader of the Fascisti.

History.—In the annals of Italy, the year 1922 will be ever memorable for the Fascisti Revolution, led to success by Benito Mussolini. The social, economic and industrial condition

of the country had been gravely disturbed by the war which was followed by a wave of violent Communism. The yoke of the bourgeoisie was to be broken. Placards on the walls ridiculed King and Army. In Rome, no military parade, celebrating victory was permitted by Prime Minister Nitti who also amnestied the defeatists. In opening the 25th legislature, the King was insulted. Soldiers, wearing decorations, were spat upon in the streets. Railroads refused to carry either police or military when in uniform. In Rome, persons were killed for crying, "Long Live Italy." The Minister of War issued orders forbidding soldiers to appear with arms. Factories were subjected to frequent strikes or were actually seized, irregular taxes were levied and municipalities were controlled, either by Socialist votes or by threats. For three years, 1919, 1920 and 1921, Italy seemed to be hurrying to Bolshevism. The red flag disputed precedence with her Tricolor. The red scarf and "the scythe and hammer" were emblems, commonly seen in the streets. Lenin's name was cheered to the echo. It was a violent reaction against the fever of war.

From the first, there was, however, clear evidence of another emotion. In Fiume, D'Annunzio symbolised Italian patriotism. But where patriotism was most needed, was at home, not abroad. And the man who fought the Communists in their stronghold was Benito Mussolini of Milan, editor of *Il Popolo d'Italia*. Born in 1884, Mussolini was still under 40 years old. The story of his life is so intimately bound up with the events we are narrating that it is best to tell it here. He started his career as a Marxian Socialist and before the war, was editor of the *Avanti*, director of the Italian Communist Party and a recognized leader of the Italian proletariat. Early in 1914, his mind was disturbed by the revolutionary outbreaks in Romagna of which he was a leader. After much destruction of life and property, the uprising failed, Mussolini becoming, if possible, more truculent than ever.

With the outbreak of the World War, he revealed himself, however, as an Italian first and a Socialist second. "We must act," he declared, "move, fight and, if necessary, die. Neutrals have never dominated events; events have always dominated neutrals. Blood alone moves the wheels of history." In November 1914, he was drummed, therefore, out of the Socialist Party, and at once he started his new paper. For a time he was suspected by the government and refused an opportunity to serve in the army, but in due course, he was sent to the front, was wounded, was decorated and discharged, his duty done. The defeat at Caporetto, to which Socialist propaganda contributed, ended Mussolini's adherence to that creed. He flung himself again into journalism, demanded an uncompromising peace, attacked President Wilson's "Fourteen Points" and supported D'Annunzio's advance into Fiume. It was that adventure which led Mussolini to organize the Fascisti. In March 1919, the enterprize which captured Italy was inaugurated.

It was in line with the tradition of Rienzi, the tribune of Rome. It recalled the heroism of Garibaldi and his "red shirts." A black

shirt was the uniform selected by Mussolini. For a time everything went against him. Outside his window, mobs would howl for his blood. Within, he sat, drinking milk, with a large quarter-master's pistol on his table. "If they come for me" said he, "I'll get two of them with this pistol. And there are not two of them ready to face it. Hence—I drink milk." Short of money, he denied himself food and so fought the Communists to a finish. Gradually, the tide turned. To Mussolini, there rallied officers and soldiers, accustomed to discipline and experienced in war. By midsummer, 1922, he had at his back 500,000 "squadristi" or militants and 1,000,000 "iscritti" or reserve Fascisti. The Trade Unionists joined him, to the number of 2,500,000 workers. The movement acquired, not only small arms but machine guns and artillery. The troops marched, steady as veterans and saluted their officers, like Romans, with the uplifted hand.

Occupying Fiume for a time, the Fascisti also marched into the Trentino, overpowered the constituted authorities and compelled the German elements in the population to accept a more definite Italian sovereignty—for instance, in the schools. During the spring of 1922, there was civil war between the Fascisti and the Communists. The Fascisti reopened factories, stopped strikes, destroyed Socialist newspapers, took over Bolshevik municipalities, and broke the power of the trade unions. They acted openly but were otherwise a kind of Ku Klux Klan or army of Vigilantes. In August, their victory in the industrial battlefield was complete. Communism in Italy was cowed. Mussolini realized, however, that Italian Bolshevism was caused by a complete failure of constitutional government at Rome. With the Parliament divided into groups, no cabinet was ever secure against defeat, either by the Right or by the Left. In 1917, Orlando followed Boselli as Prime Minister. In rapid succession, Nitti, Giolitti, Bonomi and Facta tried to stabilize the executive. All of them failed. What caused Bonomi's downfall in February 1922 was a message, congratulating the new Pope Pius XI who had opened his Pontificate with a significantly Liberal gesture on 10 July. Signor Facta resigned but again took up office as head of a coalition which it was thought might be strong enough to confront the Fascisti. In August, the provinces of Genoa, Milan, Parma, Ancona, Brescia and Livorno were placed under martial law but the troops obviously sympathized with the Fascisti rather than with the Constitutional government. A week later, there was the first talk of a Fascisti march on Rome. Mussolini, however, had his forces, strong though they were, completely in hand. The march was postponed.

Late in October, the Fascisti held a Congress at Naples. Hailed as Duce, Benito Mussolini stated that if the government were not peacefully yielded to him, he would take it by force. The government consulted General Diaz and other generals on the supreme question whether force should be used against the Fascisti. The generals advised in the negative and Signor Facta resigned. The only doubt in any mind

was upon what terms Mussolini would be called to power.

Facta had offered him certain minor offices. Mussolini had replied by demanding the portfolios of Foreign Affairs, War, Navy, Labor and Public Works. These negotiations having failed, there was now but one thing to do and that was, either to crush Mussolini, which notion had been vetoed by the Army, or to appoint him Prime Minister. The King sent a special train for the dictator and had him escorted in the royal automobile to the Quirinal. A government was then formed.

The name "Fascisti" is derived from the "Fasces" or Roman axe, in a bundle of rods, which is known as a symbol of power, wherever the classics are read. At first, the movement was anti-monarchist and anti-clerical, but Mussolini soon discovered that he could not rally the nobility and bourgeoisie against the Communists if he attacked the King and the Church. At Naples, therefore, he declared that the House of Savoy had cemented the Italian people. His Cabinet consisted of 14 Ministers. Including General Diaz, as Minister of War and Vice-Admiral Thaon de Revel, Minister of the Navy, there were seven Fascisti in the Council, with five Nationalists, a Democrat and a Catholic. Such an Administration showed plainly that Mussolini had no intention of playing a mere party game. It also shows that he meditated no quarrel with the religion from which authority has come, through Cardinal Vannutelli, a warm eulogium (February 1923) of his work for Italy.

Mussolini's program has been immediate and drastic. He has established Free Trade for Italy on the British plan. He has reduced the bureaucracy. He has enforced an honest payment of taxes as levied. He has begun, at any rate, to cut down the railway deficit which reached 500,000,000 lire a year. He has established private ownership of telephones and other public utilities which had been a source of corrupt extravagance. He has organized a volunteer militia for national defence and has so regularized the Fascisti themselves. And up to the present (1 March 1923), the people have supported him. In December 1922, the Milan municipal elections showed 85,000 votes for the Fascisti against 65,000 for all other parties combined. Other electoral victories were recorded in Ferrara, Modena, Forti, Venetia and Umbria. In Alessandria, the zeal of the Black Shirts was amusingly displayed. Anyone the worse for liquor was dosed with castor oil, bottles of which were prominently displayed in every drink shop. A "thieves congress" was also held, at which the hardened offenders were promised the cudgel unless they reformed their ways.

It is, of course, quite too early to pronounce any final judgment upon the Fascisti upheaval. If the Communists had retained Mussolini as leader or discovered a leader of similar courage and ability in 1920, there might have been a very different story to tell. With all its display of patriotic efficiency, Fascismo is revolutionary. It is led by a Caesar who has crossed the Rubicon of constitutional liberty. And, in Bavaria, the so-called Fascisti of that state are frankly monarchist and reactionary. Even in Italy,

there are signs that the Army will not be reduced.

In build and demeanor, Mussolini has been likened to Napoleon, who also was a south European and fond of the dramatic. His domestic reforms are really a Code Napoleon for Italy. His most potent persuasion would be, as his enemies know, a whiff of Napoleon's grape shot. Hence, there has been some anxiety over his foreign policy. Apparently, he agrees with a preceding Government in holding that Italians must emigrate. If the United States is closed to them, it follows that life in Asia Minor and even along the eastern shores of the Adriatic, must be made tolerable. Over the Ruhr crisis, Mussolini gave a qualified support to France. Undoubtedly, opinion in Italy has been of late emotionally hostile to Britain. But up to the present, (1 March 1923) Mussolini's bark, as a diplomatist, has been worse than his bite. He has decisively disciplined D'Annunzio who showed signs of independent action and, in view of the fact that the reforms within Italy herself hit many powerful interests, it is possible that the new government will be fully occupied in the immense task of carrying them through. A vital question for the Prime Minister has been: How is he to retain a majority in the Parliament? His plan is to reverse the principle of Proportional Representation. He ordains that the largest party, even if it be not a majority, shall be allotted three-fifths of the seats.

PHILIP WHITWELL WILSON.

ITALY, Sons of (Figli d'Italia). The most important Italian organization in the United States. It aims to bring together Italians in America without regard to either politics or religion, and to co-operate in every way in firmly establishing bonds of sympathy and friendship between Italy and America. In this connection, though the Order of the Sons of Italy encourages the spread of the Italian language and culture, it urges all Italians in America to become American citizens.

The order strives to convince Italians in America that they should (and with great advantage) protect their interests and the future of their children by participating in every phase of the life of this republic, feeling sure that the Italian immigrant possesses qualities of heart and mind such as to warrant his being considered not merely an efficient worker but also a valuable contributor to the progress and the moral greatness of the United States. The Order is more than 1,000 lodges strong and boasts of several hundred thousand members. It has a complete system for mutual help—assistance in case of sickness, subventions to widows of members, banks, schools, clubs, libraries, and many other forms of social welfare. Of late, as a result of the suggestions and support of Dr. Peter De Leo, several scholarships were voted for boys and girls of Italian extraction in need of financial assistance to get through college. Recently an agreement was reached with Lega Nazionale, of Rome, for co-operation in the assistance to Italian emigrants.

The Order is organized under its own form and lines. The head is called "Supreme Vener-

able." It has its own monthly publication, ably edited since its beginning by Baldo Aquilano, one of the strongest supporters of the Order, who has spared neither time nor money to insure its success. Its head (1923) is Cav. Giovanni Di Silvestro, a well-known Philadelphia lawyer. Among its members are most of the leading Italians in the country, such as the Italian Ambassador, Senator Cotillo of New York, Congressman F. H. La Guardia, and many others well-known in the fields of political science, business and education.

IVORY COAST, a French West African possession, situated between the Republic of Liberia and the British Gold Coast. It has an area of 121,976 square miles approximately and a population of 1,545,680, of whom 835 are Europeans. The frontiers of the Colony have been delimited by conventions with Great Britain and Liberia and by decree with the other French West African possessions — Guinea and Upper-Senegal-Niger. France first secured coastal rights about 1843, but did not begin regular occupation of the region until 1883. Bingerville, the seat of the administration, has about 80 Europeans among its population. Grand Bassam is the principal port. Other ports are: Assinie, Grand Lahou, Sassandra and Tabou. Inland towns are: Abijeau, Aboisso, Bondoukou, Bouake, Dimzokro and Korhogo. Indian corn, rice, plaintains, pine-apples and other fruits are cultivated by the aborigines, while the whites grow coffee and cocoa. Cocoanuts and rubber are gathered and the forests yield mahogany. Gold is found in several districts. The external trade of the region in a recent year exceeded 115,000,000 francs, with exports slightly in excess of imports. The chief imports are: tobacco, wine, foodstuffs, petroleum and motor vehicles; chief exports: palm kernels, palm oil, coffee, cocoa, rubber, mahogany and other woods, and cotton. The Ivory Coast is

visited by several lines of steamships — French, Belgian and British. There are 197 miles of railway, extending from Abidjan, on the Grand Bassam Lagoon inland between Abijeau and Bouake. It is proposed to extend this line to the Niger and the Upper Volta. There are 2,300 miles of telegraph line and 117 miles of telephone lines and a wireless station at Tabou. The colonial budget is balanced at 15,000,000 francs. The Colony is administered by a Lieutenant-Governor, who is subject to the direction of the Governor-General of French West Africa.

IVORY, SHELL AND BONE WORK.

According to a report of the Federal Bureau of Census, 39 establishments engaged primarily in the manufacture in the United States in 1921 of articles made from ivory, shell and bone, exclusive of buttons, combs and hair pins, turned out products valued at \$2,395,000 as compared with products valued at \$2,817,000 turned out by 33 establishments in 1919, and products valued at \$1,896,000 turned out by 38 establishments in 1914. The products included under this heading are such articles as mosaics, whip handles, knife handles, napkin rings, umbrella handles, hatpins, etc. Massachusetts and New York were the leading States in the industry in 1921, the former reporting 27.4 per cent, and the latter 27.1 per cent of the total value of the products in that year. The average number of wage earners employed was 674 in 1921, 842 in 1919, and 795 in 1914. Wages paid amounted to \$690,000 in 1921; \$735,000 in 1919, and \$391,000 in 1914. Materials used cost \$1,144,000 in 1921; \$1,294,000 in 1919; and \$958,000 in 1914. The above figures do not include establishments turning out products valued at less than \$5,000, of which there were three in 1921, which reported products valued at \$8,000.

I. W. W. See **INDUSTRIAL WORKERS OF THE WORLD.**

J

JACKSON COLLEGE FOR WOMEN.

See TUFTS COLLEGE.

JACOBI, Victor, Hungarian composer: b. Budapest, 1885; d. New York City, 10 Dec. 1922. His works were chiefly light operas. His first success was 'The Proud Princess' composed in 1906. This was followed by other light operas, which, although popular, were not heard in this country. The first work to be presented in the United States was 'The Marriage Market,' produced in 1914. His greatest success was 'Sybil' (1916), with Julia Sanderson, Donald Brian and Joseph Cawthorn in the cast, and afterward played in London with Collins in the title-rôle. Later he collaborated with Fritz Kreisler in 'Apple Blossoms.' This was followed by 'The Half Moon.' 'The Love Letter,' his latest work, is founded on Molnar's play 'The Wolf.'

JAMAICA, a British colony and the largest island of the British West Indies. Attached to it are Turks and Caicos islands, Cayman Islands, Morant Cays and Pedro Cays. The area of Jamaica is 4,207 square miles and of the dependent isles 224 square miles. The population numbers 857,921, of which 15,605 are whites and 630,181 black and 163,201 colored. The capital is Kingston with a population of 57,379. There are 693 public schools with 92,716 enrolled pupils, four training schools, two secondary schools mostly supported by the state and also endowed secondary and high schools and industrial schools. The revenue in 1921 was £2,347,362 and the expenditures £2,332,635. The public debt amounts to £4,011,561. In 1921 the exports were valued at £7,146,010 and the imports at £10,313,282. The chief imports in that year were flour, cotton goods, and fish. The principal exports were bananas, coconuts, logwood, logwood extract, sugar, coffee, rum and cacao. In 1921 there were 1,074,703 acres under cultivation, of which 53,794 were planted to sugarcane, 22,297 acres to coffee, 55,368 acres to bananas, 37,837 acres to cocoa, and 18,014 acres to coconuts. There are 197¼ miles of railway in the colony of 4 foot 8½ inch gauge; 2,226 miles of main roads, and 100 miles of tramways. There is a garrison of regular troops and a local artillery militia. Port Royal is strongly fortified. The Governor is assisted by a Privy Council and a Legislative Council, composed of the Governor as President and of five ex-officio, 10 nominated and 14 elected, members. The Governor in 1922 was Sir Leslie Probyn.

JAMESTOWN COLLEGE, a Presbyterian co-educational institution, founded in 1909 and located at Jamestown, N. D. In 1922-23 it had a faculty of 29 members, 312 students, property valued at \$1,004,000, including buildings, endowment, loan fund, etc., and an income of \$101,000. Barend H. Kroeze, A.M., LL.D., is president.

JAPAN, an island empire of the Far East, consisting of the five principal islands of Honshu,

Kiushiu, Shikoku, Hokkaido, and Taiwan, and numerous lesser islands and the peninsula of Chosen (Korea). The grand total number of islands is 438, with a total area of 260,738 square miles. The population of the Empire is 55,961,140. To this must be added the population of Chosen, 17,284,207; of Taiwan or Formosa, 3,654,398, and of Karafuto, 105,765, making a grand total for Japan of 77,005,510. The number of foreigners in Japan on the date of the last census was 25,880; of whom 14,258 were Chinese, 2,384 English, 2,036 American, 568 German, 460 French, 233 Portuguese, 135 Dutch, 1,232 Russian, and 144 Swiss. Tokio, the capital, has a population of 2,173,162. The second largest city is Osaka with 1,252,972. Other large cities are Kobe, 608,628; Kyoto, 591,305; Nagoya, 429,990; Yokohama, 422,942; Nagasaki, 176,554; Horoshima, 162,391; and Kanazawa, 158,637.

Religion.—There exists the fullest religious freedom. The leading forms are Shintoism, Buddhism. There are 49,346 shrines of the former with 14,759 priests and 71,681 Buddhist temples with 52,250 priests and priestesses. There are 2,566 licensed preachers of the several Christian faiths. The Roman Catholic Church has an archbishop and three suffragan bishops.

Education.—Primary education is compulsory from the age of six to 14. The number of children of this school age is reported as 9,061,000. Educational statistics for the year 1919 showed 612 kindergartens with 1,750 teachers and 51,834 pupils; 74 schools for the blind and dumb with 495 teachers and 3,641 pupils; 25,625 elementary schools with 173,000 teachers and 8,137,347 pupils; 337 middle schools with 6,991 teachers and 158,974 students; 420 girls' high schools with 5,287 teachers and 118,932 students. 94 normal schools with 1,915 teachers and 27,078 students; 704 special and technical schools with 9,050 teachers and 160,922 students; 14,691 miscellaneous schools with 111,873 teachers and 982,071 students; 8 high schools with 356 teachers and 6,731 students; and 5 universities with 970 professors and 9,040 students. These 5 universities are the Imperial universities of Tokio, Kyoto, Tohoku, Kyushu, and Hokkaido. There are 11 other schools which were admitted to university rank in 1920—Waseda, Keio, Meiji, Chu-o, Nihon, Hosei, Doshisha, Kokugaku-in, and the universities of medicine of Osaka and A-ichi and the University of Commerce of Tokio. These institutions have about 22,000 students. There are 1,359 libraries in the empire with 4,775,266 volumes—4,500,683 Japanese and Chinese and 235,183 European. A total of 37,000 books was printed in 1918, in which year there were published 3,123 periodicals of all classes.

Production and Industry.—The arable area of Japan is about 38,000,000 acres. Of this area 22,929,369 acres are cultivated by peasant proprietors and 15,286,246 acres are cultivated by tenants. About 8,000,000 acres are under rice fields and 7,000,000 acres under other cereals.

The wheat crop of 1921 was 3,564,418 quarters; the barley crop, 5,578,398 quarters; rye, 4,518,984 quarters; and rice, 33,750,000 quarters. The last live stock census showed in Japan 1,344,865 head of cattle, 1,479,682 horses, 5,098 sheep, 470,082 swine and 125,089 goats. Having more than 7,000,000 acres of arable land, a temperature compared with that of the American Northwest and everything nature could supply for a cattle raising country, the Hokkaido, Japan's northern island, last year had 180,000 head of horses, 32,000 head of oxen, 136,000 hogs, 1,600 sheep and 556,000 fowls. While a good profit heretofore has been made from horse raising, authorities believe cattle raising, now that the Japanese are eating more meat, would be even more profitable. It is proposed to bring 3,500,000 acres of this land under cultivation and turn approximately 2,200,000 acres into pasturage. It is estimated that on this there could be raised 540,000 head of cattle, 300,000 horses, 3,000,000 sheep and 300,000 hogs. The total value of the mineral and metal products in 1919 was 641,282,129 yen (yen equals 50 cents). The largest single item was coal which was produced to the extent of 31,271,093 metric tons valued at 442,540,941 yen. Steel and iron were produced to the value of 111,539,135 yen. Copper was produced to the value of 67,581,475 yen and oil to the value of 42,562,023 yen. Silver and gold were also important, the output of these being valued at 20,700,000 yen. There are 464,727 mining workers in the empire. There are 22,391 factories employing 1,409,196 persons. The chief manufactures are textiles, including cotton, silk and woolens; paper, matches, earthenware, lacquered ware, matting, leather, knit goods and refined oil. There are 50 cotton spinning companies with 3,043,775 operating spindles and giving employment to 140,000 persons. Sericulture is an important industry, the output being about 6,500,000 koku of cocoons yearly (koku equals 4.9 bushels).

Commerce and Trade.—Japan's total foreign trade for the calendar year 1922 to 25 December, according to unofficial figures received by the Japanese Embassy at Washington, D. C., amounted to approximately 3,453,950,000 yen, as compared with 2,866,992,000 yen in 1921, and 4,284,569,000 yen in 1920—the record year. (1 yen = \$0.4985.) Exports during 1922 were estimated at 1,594,780,000 yen, and imports at 1,859,170,000 yen, resulting in an unfavorable balance of 264,390,000 yen. A comparison of these preliminary estimates with official figures for the foreign trade during 1919, 1920 and 1921 is shown in the following table. The figures for 1922 are preliminary and are subject to revision:

FOREIGN TRADE OF JAPAN

YEARS	Imports	Exports	Total trade
	Yen	Yen	- Yen
1919...	2,173,459,880	2,098,872,617	4,272,332,497
1920...	2,336,174,781	1,948,394,611	4,284,569,392
1921...	1,614,154,832	1,252,837,715	2,866,992,547
1922...	1,859,170,000	1,594,780,000	3,453,950,000

Summaries of the leading items in Japan's import and export trade for 1922, with countries of origin or destination are shown in the following table. The quantity basis is used where possible.

PRINCIPAL COMMODITIES IMPORTED AND EXPORTED BY JAPAN.

ARTICLES AND COUNTRIES OF ORIGIN OR DESTINATION	12 months ended Dec. 31, 1922
IMPORTS	
Automobiles:	
United States, number.....	
Other countries, number.....	
Total number.....	1 752
Cotton, raw:	
India, piculs.....	4 910, 106
United States, piculs.....	2 864, 338
China, piculs.....	690, 314
Other countries, piculs.....	273, 476
Total, piculs.....	8 738, 234
Iron:	
Bar, rods, plates, and sheets:	
United States, piculs.....	7 640, 093
Great Britain, piculs.....	2 312, 267
Other countries, piculs.....	3 815, 552
Total, piculs.....	13 777, 912
Pig, ingots, and slabs:	
China, piculs.....	2 141, 373
India, piculs.....	1 666, 498
Other countries, piculs.....	1 910, 080
Total, piculs.....	5 717, 951
Pipes and tubes:	
United States, piculs.....	759, 261
Other countries, piculs.....	187, 599
Total, piculs.....	946, 860
Machinery:	
United States, yen.....	57, 285, 926
Great Britain, yen.....	42, 226, 875
Other countries, yen.....	14, 746, 572
Total, yen.....	114, 259, 373
EXPORTS	
Cotton:	
Yarn:	
China, piculs.....	638, 386
Hongkong, piculs.....	249, 683
India, piculs.....	205, 438
Other countries, piculs.....	87, 897
Total, piculs.....	1, 181, 314
Textiles:	
China, yen.....	108, 662, 154
India, yen.....	33, 545, 495
Dutch East Indies, yen.....	24, 909, 282
Other countries, yen.....	54, 791, 018
Total, yen.....	221, 907, 949
Knit goods:	
India, dozen.....	1, 048, 177
China, dozen.....	253, 799

¹ Figures not available by countries of origin.

² Picul = 133½ pounds.

³ Includes estimated quantities for December.

⁴ 1 yen = \$0.4985.

Communications.—The merchant marine of the Empire consists of 2,870 steamers of 2,840,650 tons gross; 13,781 sailing vessels of European pattern of 945,033 tons; and 925 sailing vessels of Japanese pattern of 295,931 tons. Shipping companies for foreign trade are subsidized by the government, the budget for 1923 containing provisions for navigation bounties and mail subsidies

amounting to 9,965,797 yen (about \$5,000,000). There are now regular steamer routes for Japanese vessels from Japan to Europe, Australia, North and South America and to Chinese ports. There are 8,207 miles of railways in the Empire, of which 6,202 miles are owned by the state. The gross income from all lines in 1920 was 406,707,225 yen and the expenditure 326,712,559 yen. The freight carried weighed 15,002,174 tons and the passengers carried numbered 467,562,974. There are 732 miles of electric tramways in the country; 7,941 post and telegraph offices; 20,106 miles of telegraph lines and 9,069 miles of telephone lines.

Finance.—The budget for the fiscal year 1922-23 provided for a total expenditure of 1,466,000,000 yen, or about \$700,000,000, of which 938,000,000 yen is set aside for ordinary expenditures and 528,000,000 yen for extraordinary expenditures. For the army and navy alone the budget carried appropriations of 646,662,000 yen, or nearly half the total. The estimated revenue is \$722,500,000. The budget for fiscal year ending 31 March 1924, passed by the Cabinet and to be presented at next session of Parliament, gives estimated revenue and expenditures of 1,350,000,000 yen, decrease of 131,000,000 from previous year (parity of yen is \$0.4985). An important cause of decrease in expenditures is limitation of armament, accounting for 70,000,000 yen, while revival of the sinking fund, suspended since 1920, adds 42,000,000 yen to ordinary expenditures. Estimated budget, compared with the previous year, follows:

Revenue:		Compared with previous year
Ordinary.....	1,236,000,000 yen	9,000,000 less
Extraordinary..	114,000,000 yen	122,000,000 less
Expenditures:		
Ordinary.....	987,000,000 yen	45,000,000 more
Extraordinary..	363,000,000 yen	177,000,000 less
Total.....	1,350,000,000 yen	131,000,000 net dec.

The total amount of this budget was a decrease of 101,000,000 yen approximately from the expenditures of the fiscal year 1921-22, made necessary by the decrease in revenues from taxes and government enterprises. The surplus carried over from year to year is being decreased rapidly. The public debt at the beginning of 1922 amounted to 3,115,038,383 yen, of which 1,686,744,851 yen was for internal loans and 1,428,293,532 yen for foreign loans. The local debt amounts to 400,000,000 yen.

Army.—Military service is compulsory. Liability of the subject to military service begins at the age of 17 and continues to the age of 40, but actual service begins at the age of 20 years. Service with the colors is for a period of two years in all arms. The war strength of the nation on mobilization is about 700,000 combatant troops. No summary of the peace strength of the Japanese army is ever published, but in 1921 the United States War Department estimated it at 300,000 men of all ranks. In 1922, in line with the policy adopted in all government departments the Japanese War Office decided in August to retrench the personnel of the army by 56,000 men. At the same time it was proposed to reduce the expenditure on the army by a sum of about 20,000,000 yen.

Navy.—The naval program of Japan was greatly modified by the Washington conference. At present the Japanese fleet comprises 10 capital ships of the post dreadnought type, 5 armored cruisers, 13 light cruisers, four torpedo gunboats, 120 destroyers, 19 torpedo boats, and 38 submarines. See WASHINGTON CONFERENCE.

Government.—The Emperor exercises the executive power with the consent of the Imperial Diet. The latter consists of two houses, a House of Peers and a House of Representatives. The House of Peers is largely appointive and almost entirely unrepresentative, except in relation to the large taxpayers. Its membership at present is 373. The lower house has 463 members, who are elected by male Japanese subjects not less than 25 years of age, residents of the electoral district and payers of a land tax not less than three yen in a year for more than one year or direct taxes not less than three yen for more than two years. The Prime Minister to June 1922 was Viscount Takahashi, who was succeeded by Baron Kato. The Emperor is Yoshihito, who succeeded his father 30 July 1912. Owing to the continued ill-health of the Emperor the Crown Prince Hirohito was made Regent 25 Nov. 1921. The civil list of the Imperial household is fixed at 4,500,000 yen (\$2,250,000).

History.—At the beginning of the year there was a considerable reaction to the results of the Washington Conference. Student societies started demonstrations against the naval ratio which it was alleged was inimical to the best interests of Japan. The Premier, however, in an address to the Diet on 7 February extolled the results obtained from the viewpoint of Japanese national interests and of world peace. Commercial interests were especially satisfied with the results of the Conference. On 25 January a bill was introduced in the Diet by the Kokuminto party to cut down the army by one-half and to confine conscription to one year. The suffrage advocates claimed that only 20 per cent of the adult male population enjoyed the suffrage, or but 3,000,000 out of 15,000,000. The government successfully maintained its opposition to all attempts toward the presentation of a new suffrage bill. Serious disorders broke out in the capital on 23 February as the result of demonstrations in favor of the bill before the Diet granting universal suffrage. The government announced the stoppage of work at its naval bases in pursuance of the policy and aims of the Washington Conference. The naval base of Port Arthur is to be changed into a commercial port and Maizuru, an important naval station, is to be reduced to the rank of a naval port. In April the Japanese began the evacuation of the Chinese province of Shantung. The suffrage problem continued to be one of the most pressing for solution. The Opposition party presented a resolution to the House of Representatives denouncing the use of the police in suppressing the suffrage demonstrations at the opening of the debate on the suffrage bill in the Diet. The press almost unanimously supported the suffrage movement. A stormy debate took place in the Diet in March relative to the country's whole military policy in the East. Mr. Ozaki Yukio, widely known as a champion of disarmament, moved an amendment to the recommendations of

the special committee on disarmament. The latter proposed to cut the army appropriations by 40,000,000 yen and to reduce the period of military service for infantry to one year and four months. Mr. Yukio proposed a reduction of 100,000,000 yen, in view of the fact that Russia, the only potential enemy against whom these military preparations were directed, was then helpless and would so continue for many years. His amendment was defeated. On 2 May Premier Takahashi asked for the resignations of the ministers of Agriculture, the Interior, Education and of Railways; the reason assigned for this action being that he desired to obtain a cabinet in full sympathy with his policy for the speedy ratification of the treaties resulting from the Washington Conference. The Takahashi cabinet resigned on 6 June, the main reason given being a divergence of views on the reconstruction of the cabinet. Premier Takahashi had succeeded to this office on the assassination of Premier Hara and took over the personnel of the latter's cabinet intact. The withdrawal of Takahashi was deeply regretted by the advocates of disarmament because he was believed to be the best fitted to effect a reduction of armament and to still the clamor of the militarists. His aims for the extension of the suffrage had alienated from him the support of the wealthy classes and of the agriculturists. On 11 June, Admiral Baron Kato accepted the premiership and formed a non-party cabinet pledged to the execution of the Washington agreements. The Premier's acceptance was by him made conditional on the agreement by the leaders of the army that the budget of the army be reduced by 40,000,000 yen. Baron Kato is a pronounced anti-militarist and as such his elevation gave promise to those who had supported Takahashi in his pacifist policies. This promise was fulfilled as shown by the trend of events following the inauguration of the new cabinet. A series of governmental decisions of the most momentous importance was announced between 21 June and 4 July; all the Washington treaties were approved by the Privy Council, including the Yap Treaty; negotiations were begun with China to fulfill the separate treaty regarding Shantung; plans were announced for a drastic reduction of the army; the tentative naval plans were made public; the evacuation of Siberia was decided upon and the date of withdrawal actually fixed for 30 October. The evacuation of Siberia began on 4 September when a transport took the first contingent of troops back to Japan. As districts were evacuated by the Japanese the troops of the Far East Republic marched in. This caused considerable uneasiness in Vladivostok, where the Whites under Merkulov and Diedrichs had for months been in a state of war with the Chita government. A conference between representatives of Japan, Russia and of the Far East Republic met at Chang Chung in Manchuria on 4 September but broke up three weeks later following several deadlocks. The immediate cause of the breaking up of the conference was the firm refusal of Japan to evacuate the northern half of Saghalien. Japan determined to hold North Saghalien until she received satisfaction for the massacre of 1920. The representative of Soviet Russia, M.

Joffe, asserted that his government would never pay an indemnity for this massacre, which was committed by partisans and precipitated by the Japanese themselves. Later the Japanese retention of North Saghalien was characterized by the Japanese Foreign Minister as "only a qualitative guarantee for the settlement of the Nikolaievsk affairs." By 26 October the evacuation of Siberia was completed and Japan had closed the books of her adventure on the mainland at a cost of 1,500,000,000 yen. Representatives of the Moscow and Chita governments took possession of Vladivostok and of the great stores of arms and munitions there. With the completion of the evacuation the only Japanese forces remaining on Russian soil were those on North Saghalien and the Japanese public was demanding the return of these also, alleging that the resumption of trade with Siberia would be impossible until this is accomplished. There were riots in Osaka during the inauguration meeting of the Japanese federation of all labor unions. The meeting was attended by 96 delegates from 62 unions and by 200 delegates from Socialist organizations. The police were forced to intervene before the meeting concluded its work. What was regarded as a most important court decision was handed down by the Appellate Court of the District of Osaka setting Geisha girls free from the obligations contracted for them by their parents or guardians. The court held that such contracts savored of slavery and were non-enforceable.

JAPANESE BEETLE. See ENTOMOLOGY, UNITED STATES BUREAU OF.

JAVA, the most important colonial possession of The Netherlands. Including the neighboring island of Madura, the whole of Java is divided into 17 residencies, each governed by a Resident. See DUTCH EAST INDIES.

JEBEL SHAMMAR, Emirate of. See ARABIA.

JEFFERSON COLLEGE, a Catholic educational institution for men, founded in 1831 and located at Convent, La. In 1922-23 it had a faculty of 17 members and 150 students. Figures regarding value of institution's property and its income not given. Very Rev. P. F. Quinn, S.M., is president.

JENKS, Arthur Whipple, American clergyman and author: b. Concord, N. H., 9 Aug. 1863; d. Flushing, Long Island, 18 April 1922. He was graduated at Dartmouth College in 1884, received the degree of M.A. from the same institution in 1887 and the degree of D.D. in 1911. In 1896 he was graduated at the General Theological Seminary of New York with the degree of B.D. He was ordained a deacon of the Protestant Episcopal Church in 1892 and priest in 1893. He was rector of Saint Luke's church at Woodsville, N. H., 1892-95. From 1895-1901 he was professor of ecclesiastical history at Nashotah House, Wis., and from 1901-10 held the chair of divinity and church history in Trinity College, Toronto, Canada. In 1910 he joined the faculty of the General Theological Seminary in New York, and remained there until his death. He had long been a leader in ecclesiastical circles, and was the organizer of the courses of lenten lectures at the Church of the Trans-

figuration in New York City. He had a wide reputation as a preacher, a conductor of retreats and a writer. He traveled extensively in Europe, and it was said that he, being an enthusiastic musician, had satisfied an ambition to play on every cathedral organ in England. He was a member of the American Historical Association, the Alpha Delta Phi and the Phi Beta Kappa societies. He was associate editor of the *Anglican Theological Review* of Chicago. He contributed special articles to magazines, and was the author of 'Beatitudes of the Psalter' (1914), 'Use and Abuse of Church History' (1915), 'Moments Rich in Blessing' (1916); and edited 'A Handbook of the American Episcopal Church.' At the time of his death he was engaged in writing a 'History of the General Theological Seminary' and 'The Life of the Reverend Doctor De Koven.'

JENKS, Tudor, American lawyer, author, editor: b. Brooklyn, N. Y., 7 May 1857; d. Bronxville, N. Y., 11 Feb. 1922. He was educated at Yale, being graduated in the class of 1878. Two years later he received the degree of LL.B. from the law school of Columbia University. Relinquishing the law for a time his artistic leanings drew him to Paris where he studied painting during the winter of 1880. On his return home, however, he engaged in the practice of law, with occasional writing, until in 1882 he definitively abandoned the law for many years and entered on a literary career, becoming associate editor of *St. Nicholas*. He retained this post for 15 years and then resumed law practice, although continuing from time to time to publish books for young readers. Among his best known works are the following: 'Boy's Book of Exploration,' 'Defense of the Castle,' 'In the Days of Chaucer,' 'Magic Wand Series,' 'In the Days of Scott,' 'Electricity for Young People,' 'When America Won Liberty,' 'The Book of Famous Sieges,' 'Chemistry for Young People,' 'What Shall I Be—A Fireman?.'

JEWISH CONGREGATIONS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

JEWISH JOINT DISTRIBUTION COMMITTEE, American. The American Jewish Joint Distribution Committee representing the American Jewish Relief Committee, the Central Relief Committee and the Peoples Relief Committee, was organized in 1915 as an agency for distribution of relief to Jewish war sufferers. As of 31 Dec. 1922, a total of over \$55,000,000 had been appropriated from the funds of the organization, of which amount \$48,000,000 had been actually disbursed.

During the year 1922 a gigantic feeding problem was introduced in Russia, which was not accessible until that time; the year 1922 also saw a tremendous increase in the reconstruction activities for the rehabilitation of war-stricken sections of Europe and Palestine and a continuance of other activities inaugurated earlier in the period of organization—namely, medical sanitary operations, refugee relief work, and childcare.

The major part of the work in Russia was carried on in co-operation with the American Relief Administration. Approximately \$675,000

was granted by the Jewish Joint Distribution Committee for non-sectarian feeding in the Volga region. Extended feeding programs and rehabilitation operations were conducted in the Ukraine and South Russia and as of 31 Dec. 1922, approximately \$7,500,000 was appropriated for these sections, \$1,290,000 of which was applied against a reconstruction program, to be undertaken as a distinct activity of the Jewish Joint Distribution Committee, the balance to be applied for direct relief in the form of food, clothing, fuel, etc.—the child feeding was carried on under the auspices of the American Relief Administration, the reconstruction and other relief activities under the direct auspices of the Jewish Joint Distribution Committee. The reconstructive plans include the setting up of loans, programs for the establishment and support of trade schools, aid to farmers through the distribution of American seeds and machinery.

Long before Russia was opened to reconstructive activities, representatives of the reconstruction department had been assigned to Poland, Roumania, and other countries of Eastern Europe, and considerable headway had been made in Palestine. The reconstruction department provided funds for the organization of chains of credit banks; for the extension of loans to countless co-operative groups and societies; for the rebuilding of homes and shops; for the reconstruction, equipment and partial maintenance of trade and vocational schools. At the end of the year reconstruction department offices were in operation in Rumania, Poland, Lithuania, Latvia, Hungary, Czechoslovakia, Constantinople, Saloniki and Palestine. The sum of \$5,700,000 was set aside for the economic reconstruction program, and, including the amount assigned for the work in Russia, almost \$4,200,000 of this sum had been appropriated for specific reconstruction activities.

The medical department reported that 140 community bath houses were being reconstructed or repaired. Of these 140 bath houses, 53 were to be newly constructed, and it was expected that all would be completed early in 1923. In addition to these bath houses which conform to the required sanitary and hygienic standards the Jewish Joint Distribution Committee made contributions toward the repair of 73 other bath houses, which, although not adequate buildings, are used by the communities for want of better facilities.

The Jewish Joint Distribution Committee also contributed toward the repair of 34 hospitals; 31 ambulatoria; 7 sanatoria and 22 wells.

In addition to the above, \$100,000 was set aside for the treatment of favus throughout Poland; \$50,000 for a nurses' training school and \$25,000 for public health education.

In accordance with its policy of co-operating and working in conjunction with governments wherever possible, agreements were signed with the governments of Palestine and Poland. The agreement with Palestine provided \$86,713 for the equipment of an anti-malarial research unit. The agreement with Poland provided \$40,000 for the purchase of a building to be used as a hostel for students of the School of Public Hygiene at Warsaw. The total amount appropriated to

JEWISH WELFARE BOARD

31 Dec. 1922 for medical work of the American Jewish Joint Distribution Committee was \$1,525,677.42.

The Child Care Department functioned in all Central European countries, Turkey and Palestine. Over 44,000 children were registered with the bureau, and 16,000 war orphans were placed in institutions or with private families—either with money from the general fund of the Jewish Joint Distribution Committee, or with the aid of American financial adoptors. Of these, 12,000 are in Poland. In addition to the care of orphans abroad the department supervised the reunion of 800 war orphans with their relatives in America. From January to 31 Dec. 1922 the sum of \$860,000 was appropriated for child care work.

Besides the amounts specified, appropriations were made also for repatriation, refugees and cultural work, etc., bringing the total appropriation for the year 1922 to \$10,400,000.

In addition to the distribution of its own funds, the Jewish Joint Distribution Committee, also in co-operation with the American Relief Administration, sells food and clothing packages to individuals and *Landmannschaften* (countrymen organizations) to be delivered to residents of Russia, maintains a location department which traces and re-establishes communication between relatives in America and Europe, and carries on similar branches of work.

The officers of the American Jewish Joint Distribution Committee are: Felix M. Warburg, chairman; Herbert H. Lehman and James N. Rosenberg, vice-chairmen; Paul Baerwald, treasurer; George W. Naumburg, associate treasurer; H. B. L. Goldstein, comptroller; Albert Lucas, secretary. The offices of the organization are at 64 Water Street, New York.

WILLIAM J. MACK,

American Jewish Joint Distribution Committee.

JEWISH WELFARE BOARD. This Board, first called the Jewish Board for Welfare Work, was organized in April 1917, three days after the declaration of war with Germany, for the purpose of doing welfare work among soldiers, sailors and marines in the United States forces. In September 1917, the Jewish Welfare Board was formally recognized by the government as the official agency of the Jewish community for welfare work in the military and naval camps of the United States, and established an extensive program of activities which included religious services, educational activities, entertainment, the free distribution of a wide variety of articles and the performance of personal services. Subsequently, when the military operations of this country were extended overseas, workers were assigned to transports and to camps and towns in France, Belgium and Germany where uniformed men were to be found. The greatest care was exercised in selecting competent workers. A training school was maintained, which, in 12 classes, graduated 325 men and women. One hundred and seventy-eight workers served overseas, where the Board operated 57 buildings. In the United States, activities were conducted at over 200 army posts, naval stations, camps and hospitals by 490 workers. Fifty-eight buildings were erected in

the principal camps in this country. The program carried out in the camps was supplemented by the work of 175 community committees, operating in cities that were adjacent to military and naval posts. Entertainments were arranged for men on leave, home hospitality provided and community centers maintained.

The entertainments, dances and distribution of supplies were conducted on a non-sectarian basis and no charge was made for such service. A total of 15,000 entertainments, attended by over 6,250,000 men, was arranged by the Board in this country and overseas. In addition, the Board sought to meet the special requirements of the men of Jewish faith through the conduct of religious services, observance of Jewish holidays and festivals, and the distribution of religious reading materials and supplies. At its request the War and Navy departments granted furloughs to the men to enable them to celebrate properly the high holidays and Passover. The committee on chaplains of the Board likewise recommended rabbis who were qualified to serve as chaplains in the army. The chief educational activities consisted of classes in English and citizenship. Lectures of a general cultural character were likewise conducted. In all, 3,000 classes were held in this country, attended by over 100,000 men, and several members of the staff were assigned to the Sorbonne University and the American University at Beaune in France. An important element in the program consisted of personal service activities. Contact was maintained with relatives and other interested persons, so that the families back home could be kept apprised of the well being of their soldier sons. With the signing of the armistice came a change of emphasis in the program. The entertainment program in camp and community was intensified and the educational activities increased in extent and scope, in response to the need for meeting the added leisure time requirements of soldiers and sailors waiting to be discharged. A Hospital Division was organized and especially qualified workers assigned to 57 of the principal hospitals for disabled men. These workers co-operated in the general rehabilitation activities and in meeting the personal, religious and recreational needs of the men. When the men were demobilized from active service, the Board, through community committees, organized employment bureaus and co-operated with existing agencies in securing work for ex-service men.

The Jewish Welfare Board undertook, upon the signing of the Armistice, to identify Jewish soldiers who had died in France, and to locate their graves in order that Star of David markers might be placed over these graves. This was in accordance with an order issued by the War Department in February 1918. When the markers were changed, photographs of the graves were taken and mailed to the next of kin. Arrangements were also made for funeral services in the case of those bodies that were returned to this country for interment. In recognition of its services during the World War, the French government awarded to the Jewish Welfare Board, the Medal of Gratitude of the First Class. The Chairman of the Board.

an area of 42,734 square miles with a population in 1920 of 263,683. Labrador, the easternmost part of the American continent, with an area of 120,000 square miles and a population of 3,647 is now included in the colony of Newfoundland. Of the population of Newfoundland, 67,040 are connected with the fisheries, 3,000 are engaged in farming, 6,000 in mechanics and about 3,000 are miners. The chief towns, with their populations, are: Saint John's, the capital, 34,045; Harbour Grace, 4,279; Bonavista, 3,911; Carbonear, 3,540; Twillingate, 3,348. Hay, potatoes, oats, turnips and cabbage are the chief crops raised. The value of all agricultural products is about \$5,000,000 yearly. Cattle, sheep and swine are the chief farm animals. There are large pine forests in the north and there several saw mills are in operation. Iron, copper and coal are mined. Iron ore is abundant in the Conception Bay region. Exports of iron ore average 700,000 tons. Silver, lead and gold are found. There are several extensive paper and pulp mills at Grand Falls, Lomond, and Alexander Bay. Fishing is the chief occupation of the colony, the value of the products of this industry being about \$20,000,000 annually. The fishing for cod is the chief branch of the industry, the catch averaging 1,400,000 quintals yearly. The lobster catch in 1920 amounted to 2,331,295. In 1921, 101,452 seals were taken. In all about 15,000 vessels of all kinds, sail and motor, are employed in the fishing industry. Imports in 1921 were valued at 5,962,218 pounds sterling and the exports at 4,628,511 pounds sterling. Textiles, flour, coal, hardware, salt pork, machinery, tea and molasses form the bulk of the imports, while dried cod, pulp and paper, iron ore, herring, seal oil, cod oil, seal skins and lobsters constitute the exports. In 1921 imports to the value of \$3,230,305 came from the United Kingdom; \$14,841,561 from Canada and \$9,556,244 from the United States. Exports to the value of \$6,275,098 went to the United Kingdom; \$1,976,032 to Canada and \$1,854,101 to the United States. Vessels registered in 1920 numbered 3,362 sail vessels of 152,166 tons and 137 steam vessels of 22,018 tons, making a total of 3,499 vessels of 174,184 tons. The colony has 904 miles of government owned railways and 47 miles of privately owned line. The chief towns of the island are now connected by rail. There are 847 post offices, 213 telegraph and 90 telephone offices. A fleet of 13 first class steamers maintain communications along the coast and with the mainland of Canada. The affairs of the colony are administered by a Governor, assisted by an Executive Council and a Legislative Council. There is also an elected House of Assembly of 36 members. The Governor and Commander-in-chief in 1922 was Sir C. A. Harris. The Prime Minister and Colonial Secretary was Hon. Sir R. A. Squires.

NEW GUINEA, an island of the Melanesian group lying to the north of Australia. It has an area estimated at 234,768 square miles. Territorially it is divided under Australian, British and Dutch control. Until the World War the greater part of the north shore region was a German colony called Kaiser Wilhelm's Land. This was occupied by Australian forces

in September 1914 and at the peace was placed under mandate to Australia. The part of the island west of the 141st meridian belongs to the Netherlands and has an area of 151,789 square miles. The Australian part has an area of 70,000 square miles while the British portion has an area of 90,540 square miles. Coconuts, rubber, cocoa and tropical fruits are the chief products of the island. There is considerable mineral wealth but development is retarded because of the difficulty of introducing mining machinery into the inland regions, there being no improved means of transportation.

NEW HAMPSHIRE, the Granite State of New England, bounded on the north by Canada, east by Maine and the Atlantic Ocean, south by Massachusetts, and west by Vermont. It is one of the 13 original States. It has an area of 9,341 square miles, and in 1920 had a population of 443,083. The State is 43d in order of size and 41st in order of population among the States of the Union. The census of 1920 showed a population of 442,331 whites, 621 negroes, 103 Asiatics and 28 Indians in the State. In the same year the foreign born numbered 91,233, and included 52,274 Canadians, 7,908 Irish, 4,367 English, 3,467 Russians, 1,886 Swedes and 1,714 Germans. The chief cities are: Concord, the capital, with a population of 22,157; Manchester, 78,384; Nashua, 28,379; Dover, 13,029; Berlin, 16,014; Portsmouth, 13,569; Keene, 11,210; Laconia, 10,897, and Rochester, 9,673.

Religion.—The principal Christian denominations have an aggregate membership of 210,736. Of this number, 136,020 are Roman Catholics, 20,084 Congregationalists, 17,335 Baptists, 13,574 Methodists, 6,155 Episcopalians, 3,890 Unitarians and 908 Presbyterians.

Education.—The State appropriation for education in 1922 was \$1,129,246.27. The State requires that 36 weeks of schooling must be provided in every town and township yearly. Attendance is compulsory for all children between the ages of eight and 14 during the whole school period, and the compulsory age is extended to the age of 16 for those children who have not completed the elementary grades on attaining the age of 14. In the State public schools there are 2,648 teachers and 64,205 pupils. The State has 86 high schools, with 673 teachers and 13,055 pupils, two normal schools, with 31 teachers and 286 students. The Roman Catholic Church maintains parochial schools in practically all the cities and towns in the State. For purposes of higher education there are in the State, Dartmouth College and the New Hampshire College of Agriculture and Mechanic Arts.

Finances.—At the beginning of the last fiscal year the balance in the State treasury amounted to \$789,041.32. Receipts during the fiscal year amounted to \$7,691,699.35. Disbursements during the same period totaled \$6,793,157.72, leaving a balance on hand at the beginning of the current fiscal year amounting to \$1,687,582.95. For the current fiscal year 1922-23 the estimated receipts are \$3,294,766.30, while the expenditures outlined in January 1923 totaled \$4,381,188.88, but this sum was subject to change by the legislature which was then in session. The bonded debt of the State beginning

1923 was \$2,489,500. The floating debt was \$1,128,004.54, making a total indebtedness of \$3,617,504.54. The assessed value of all real property was \$456,584,737, and of personal property, \$109,884,607.

Agriculture.—Most of the population is employed in agriculture, but manufacturing interests occupy almost an equal number. There are in the State 20,523 farms with a total acreage of 2,603,806 acres. In 1920 the total value of all farm property was \$118,656,115. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 24,000 acres, 1,032,000 bushels, \$774,000; barley, 1,000 acres, 28,000 bushels, \$27,000; oats, 18,000 acres, 684,000 bushels, \$410,000; buckwheat, 1,000 acres, 25,000 bushels, \$31,000; tame hay, 450,000 acres, 585,000 tons, \$11,408,000; potatoes, 14,000 acres, 1,400,000 bushels, \$1,470,000; apples, 775,000 bushels; peaches, 32,000 bushels, and pears, 24,000 bushels. On 1 Jan. 1923 there were in the State 35,000 horses, valued at \$3,990,000; 126,000 milk cows, valued at \$7,434,000; other cattle, 34,000 valued at \$867,000; 18,000 sheep, valued at \$140,000, and 28,000 swine, valued at \$476,000. The value of all crops in 1920 was \$23,509,000. In that same year the value of the industrial products totaled \$407,205,000. Cotton goods led, with an output valued at \$85,986,000, followed by boots and shoes with \$73,871,000; paper and pulp, \$41,826,000, and woolens, \$31,245,000. The manufacturing industries are mostly located in the southern half of the State and about 100,000 persons are employed therein. An occupation which may now be regarded almost as an industry is the summer entertainment of tourists in the mountain and lake regions. Minerals are little worked, but granite and mica are quarried.

Communications.—The State has a steam railroad mileage of 1,252, and 251 miles of electric railways. The State has a fine system of modern roads, even in the mountain regions.

Government.—The executive is a Governor, elected for two years, who receives a salary of \$3,000. The legislature consists of two bodies—a Senate of 24 members, elected for two years and a House of Representatives of 422 members. The Legislature meets biennially in January of odd years. New Hampshire sends two Senators and two Representatives to the Federal Congress. For local administration the State is divided into 10 counties.

Officials.—The officials in 1922 were: Governor, Albert O. Brown, whose term expired 4 Jan. 1923; Secretary of State, Edwin C. Bean; Attorney-General, Oscar L. Young; Treasurer, John W. Plummer, and Superintendent of Education, E. W. Butterfield. Officials entering into office in 1923 were: Governor, Fred H. Brown; Secretary of State, Enos K. Sawyer; Attorney-General, Oscar L. Young; Treasurer, George E. Farrand, and Superintendent of Education, Ernest W. Butterfield.

Judiciary.—Members of Supreme Court: Frank N. Parsons, John E. Young, Robert J. Peaslee, William A. Plummer and Leslie P. Snow.

Legal Holidays.—1 January; 22 February; 30 May; 4 July; Fast Day, when appointed; Thanksgiving Day, when appointed; First Mon-

day in September; 12 October; 25 December; Day of the biennial election.

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS, a non-sectarian co-educational institution, founded in 1866 and located at Durham, N. H. In 1922-23 it had a faculty of 93 members, 1,070 students, property valued at \$2,200,000, and an income from all sources of \$766,000. Ralph D. Hetzel, LL.D., is president.

NEW HEBRIDES, a group of islands in the South Pacific under the joint administration of Great Britain and France. The group has an area of 5,500 square miles and a population of about 60,000. The larger islands of the group are Espiritu Santo, Mallicolo, Epi, Efate, Erromanga, Tanna, Futuna and Aneitum. There are 317 British and 1,300 French subjects residing in the group. Coconuts, Indian corn, millet, coffee, cotton, cocoa, and bananas are the chief products. Kauri wood is exported. Revenue in 1920 amounted to 20,507 pounds sterling and expenditures to 16,425 pounds sterling. Imports the same year were valued at 159,174 pounds sterling and exports at 245,187 pounds. There is a good trade with New Caledonia and also with Australia. The chief imports are clothing, foodstuffs, furniture and metal work. Exports comprise Indian corn, copra, coffee, cotton, cocoa and sandalwood. Considerable friction existed during 1921-22 over the joint control by England and France. There are several French and British trading companies and some of the former desired to sell out their holdings to the British but were restrained by their home government. The British Resident in 1922 was M. King; the French Resident, M. Boisivan.

NEW JERSEY. One of the 13 original States in the middle Atlantic group, bounded on the north by New York and Pennsylvania, east by the Atlantic Ocean and New York, south by the Atlantic and Delaware Bay, and west by Pennsylvania. The area of the State is 8,224 square miles. In 1920 it had a population of 3,155,900. New Jersey is 45th among the States in order of size and 10th in order of population. The reports of the Federal census of 1920 showed the population as composed of 3,037,087 whites, 117,132 negroes, 1,581 Asiatics and 100 Indians. In the same year the foreign-born residents of the State totaled 738,613 and of these 157,285 were Italians; 92,382 Germans; 46,781 English; and 65,971 Irish. The chief cities of the State, with their populations, are: Trenton, the capital, 119,289; Newark, 414,216; Jersey City, 297,864; Paterson, 135,866; Camden, 116,309; Elizabeth, 95,682; Hoboken, 68,166; Passaic, 63,824; Bayonne, 76,754; Atlantic City, 50,682; East Orange, 50,587; Perth Amboy, 41,707; New Brunswick, 32,779; Orange, 33,239; Plainfield, 27,700.

Religion.—The principal Christian denominations have an aggregate membership of 1,337,983. Of these 790,764 are Roman Catholics; 131,211 are Methodists; 102,290 are Presbyterians; 80,918 Baptists; 67,996 Episcopalians; 38,772 members of the Reformed Church; 19,680 Lutherans, and 10,839 Congregationalists.

Education.—Primary education is free for all children from the age of seven to 21 years,

and compulsory for all children from seven to 16 years of age. In the State public schools there are 12,775 teachers, and 533,073 pupils. There are 70 public high schools with 2,365 teachers and 53,710 pupils. In addition, there are three public normal schools with 105 professors and 2,015 students. The total State expenditure averages about \$30,000,000 yearly. Higher education is provided within the State at Princeton University, Rutgers College and at Stevens Institute of Technology.

Finance.—On 1 July 1921, the balance in bank amounted to \$10,055,905.87. Receipts during the fiscal year, 1 July 1921 to 30 June 1922 totaled \$20,569,804.68; disbursements during the same period totaled \$21,834,127.61 leaving a balance on hand on 30 June 1922 amounting to \$8,791,582.94. State school tax receipts during the same fiscal year amounted to \$9,000,548.21. The bonded debt of the State on 30 June 1922 totaled \$17,000,000. At the November election of 1922, the electors authorized a bond issue of \$40,000,000 for the construction and maintenance of the State highways. In the fiscal year under consideration, deposits in the 189 financial institutions reporting to the State department of banking and insurance, increased \$34,915,108.53; aggregate deposits totaled \$827,490,952.03. Savings banks had deposits of \$206,082,451.95. The 1922 report of the State Board of Taxes and Assessments showed the assessed value of real and personal property subject to local taxation for 1922 to be \$797,507,447.11, an increase of \$277,666,178.36 over 1921.

Agriculture.—Market gardening, horticulture and fruit growing are carried on within the State. The last Federal census reported 29,702 farms with a total area of 2,282,585 acres, of which 1,555,607 acres was improved land. The value of all farm property the same year totaled \$311,847,948. The chief crops, with their acreage, yield and value for the year 1922 are shown in the following table:

CROPS	Acreage	Yield	Value
Corn.....	236,000	9,912,000 bu.	\$6,938,000
Winter wheat....	77,000	1,540,000 bu.	1,694,000
Oats.....	72,000	2,232,000 bu.	1,228,000
Barley.....	10,000	220,000 bu.	253,000
Rye.....	61,000	1,159,000 bu.	985,000
Cranberries.....	11,000	200,000 bbls.	3,950,000
Hay (tame).....	303,000	483,000 tons	8,778,000
Potatoes.....	95,000	16,435,000 bu.	11,833,000
Sweet potatoes....	20,000	3,500,000 bu.	2,520,000
Apples.....	.....	2,610,000 bu.	.....
Peaches.....	.....	2,000,000 bu.	.....
Pears.....	.....	405,000 bu.	.....

On 1 Jan. 1923 there were in the State, 72,000 horses, valued at \$9,288,000; 6,000 mules, valued at \$786,000; 153,000 milk cows, valued at \$13,511,000; 32,000 other cattle, valued at \$1,242,000; 10,000 sheep valued at \$75,000; 132,000 swine, valued at \$2,310,000.

Other Products.—The fisheries of the coast, lakes and streams are very valuable, the catch including shad, sturgeon, perch, bass, trout and menhaden. Mineral deposits of the State are magnetic iron, manganese, zinc, graphite, talc and soapstone. Clay products are one of the

leading commercial ventures of the State being valued at over \$20,000,000 yearly. Other products of the State are Portland cement, coke, mineral waters, green sand marl. New Jersey is the sixth industrial State of the Union. Its production is very varied and Newark has perhaps the widest range of manufactures of any city in the country. The output of the industries in 1920 was valued at \$2,990,939,000. Silk mills with Paterson as their chief centre, employed in that year 25,046 persons and turned out goods to the value of \$120,075,000. Oil refining is now one of the leading industries with products valued in 1920 at \$328,120,000. Explosives the same year were produced to the value of \$197,074,000. The production of chemicals totaled in value \$189,117,000; machinery, \$140,000,000; shipbuilding, \$124,000,000; woollens and worsteds, \$118,000,000; rubber goods, \$98,410,000; wire and wire cloth, \$93,353,000; tobacco, cigars and cigarettes, \$55,470,000; leather and leather products, \$45,000,000.

Communications.—The agricultural and industrial activity of New Jersey is greatly affected by its proximity to the great markets of the metropolitan districts of New York and Pennsylvania. Transit facilities are well developed, especially electric railway lines in the northern end of the State. There are 2,461 miles of steam railroads within the State and 1,593 miles of electric railways. The canal mileage is 175 miles but this is now little used for freight haulage. Many of the coastal cities are connected with New York and other Atlantic ports by regular steamship lines. Atlantic City on the southern coast has become one of the famous all-year resorts of the East and Cape May at the southern end of the State is another famous resort.

Government.—The executive of the State is the Governor who is elected for a three-year term and receives a salary of \$10,000. The legislature meets annually in January and is composed of the senate and the general assembly; the senate has 21 members, one from each county of the State, elected for three years; the general assembly, or lower chamber, has 60 members who are elected annually in proportion to the population of the counties as determined by the Federal census. New Jersey sends two senators and 12 representatives to the Federal Congress. The State for local administration purposes is divided into 21 counties which are subdivided into cities, boroughs and townships. The Governor in 1922 was Edward I. Edwards, who in November was elected United States Senator and was succeeded in the governorship on 16 Jan. 1923 by the Hon. George S. Silzer, whose term expires 16 Jan. 1926. Other State officials are: Secretary of State, Hon. Thomas F. Martin; attorney-general, Hon. Thomas F. McCran; auditor, Harry B. Salter; treasurer, Hon. William F. Read; comptroller, Hon. N. A. K. Bugbee; superintendent of education, Hon. John Enright.

NEW MEXICO, one of the mountain group of States, bounded on the north by Colorado, east by Texas, south by Texas and Mexico, and west by Arizona. Its area is 122,634 square miles and in 1920 its population totaled 360,350. New Mexico is fourth among the States of the

Union in order of size and 44th in order of population. In 1920 the population included 334,673 whites, 19,512 Indians, 5,733 negroes and 432 Asiatics. The same year the foreign born totaled 29,077, of which 19,906 were Mexicans, 1,678 Italians, 888 English and 423 Austrians. In 1920, 82 per cent of the population was rural. The chief cities of the State, with their populations, are: Santa Fe, the capital, 7,226; Albuquerque, 15,157; Roswell, 7,062, and Raton, 5,544. Indian reservations occupy 6,282 square miles of the area of the State and have an Indian population of 21,530.

Religion.—The principal Christian denominations have a total membership of 209,908, of whom 177,727 are Roman Catholics, 11,505 Methodists, 6,721 Baptists, 3,892 Presbyterians, 1,718 Episcopalians, and 366 Congregationalists.

Education.—Primary education is free and compulsory for all children between the ages of six and 16. English is the language of the schools, although Spanish is the language in most common use among the population. There are 1,430 elementary schools in the State, with 81,399 pupils and 2,752 teachers; 72 high schools, with 261 teachers and 3,876 pupils. In addition there are 26 Indian schools, with 141 teachers and 2,291 pupils. These are maintained by the Federal government. The State supports three public normal schools, with 60 professors and 2,009 students. For higher education there are many institutions including the College of Agriculture and Mechanic Arts, School of Mines, a military institute and the State University.

Finances.—At the beginning of the fiscal year 1921-22 the balance on hand amounted to \$3,481,099.41. Receipts during the year totaled \$8,716,255.71. Disbursements for the same period amounted to \$6,889,124.47, leaving a balance at the beginning of the fiscal year 1922-23 amounting to \$5,308,230.65. The estimated receipts for the fiscal year 1922-23 aggregate \$9,000,000. The bonded debt of the State at the end of 1922 was \$4,712,000.

Agriculture.—New Mexico grows cereals, vegetables, fruits and cotton. The value of all agricultural crops in 1920 was \$40,619,000. Live-stock industries are considerable. Dry farming is practised to a great extent. About 945,000 acres are included in irrigation projects, of which 550,000 acres actually receive water. In 1920 there were 29,845 farms with an acreage of 24,409,633 acres, of which less than 2,000,000 acres was improved land. The total value of all farm property in that year was \$325,185,999. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 182,000 acres, 2,475,000 bushels, \$2,030,000; spring wheat, 60,000 acres, 660,000 bushels, \$792,000; winter wheat, 45,000 acres, 225,000 bushels, \$270,000; barley, 10,000 acres, 140,000 bushels, \$133,000; oats, 62,000 acres, 930,000 bushels, \$539,000; rye, 2,000 acres, 8,000 bushels, \$8,000; broom corn, 11,000,000 acres, 1,500,000 tons, \$278,000,000; tame hay, 172,000 acres, 458,000 tons, \$6,045,000; sorghum sirup, 1,000 acres, 55,000 gallons, \$58,000; beans, 45,000 acres, 840,000 bushels, \$608,000; potatoes, 4,000 acres, 200,000 bushels, \$290,000; sweet potatoes, 1,000 acres, 120,000 bushels, \$240,000; grain sorghums, 145,000 acres, 1,595,000 bushels, \$1,276,000; apples, 750,000 bushels;

peaches, 98,000 bushels, and pears, 18,000 bushels. On 1 Jan. 1923 there were in the State 181,000 horses, valued at \$8,145,000; 21,000 mules, valued at \$1,386,000; 47,000 milk cows, valued at \$2,350,000; 838,000 other cattle, valued at \$18,352,000; 2,062,000 sheep, valued at \$13,197,000, and 89,000 swine, valued at \$890,000.

Forestry, Mining and Other Products.—Over 8,000,000 acres of the State are included in the national forest area and about 4,000,000 acres of forested land are privately owned. The State has valuable mineral resources. Its mineral output includes gold, copper, silver, coal, zinc, lead, granite, limestone, sandstone and marble, while some of the sands contain traces of platinum. The coal output in 1922 was 3,100,000 tons. The value of the output of all mineral industries in 1920 was \$45,000,000. The manufacturing industries are rather limited, the largest being railway car construction and railroad repair shops, followed by the lumber industry and flour milling. Woolen mills and cement works have increased in importance of late years. The value of the manufactures in 1920 was \$20,000,000. Metal mines in New Mexico in 1922 produced \$374,000 in gold, 700,000 ounces of silver, 2,600,000 pounds of lead, 31,000,000 pounds of copper, and 4,500,000 pounds of zinc, as compared with \$196,822 in gold, 571,899 ounces of silver, 14,267,358 pounds of copper, 678,601 pounds of lead, and 228,000 pounds of zinc in 1921.

Communications.—The State has 2,978 miles of steam railways and 12 miles of electric railways. The State is remarkable as one of the few in which the old-time life of the West may still be found, although even there it has practically disappeared. The State has some reputation as a winter resort, while many anthropologists and artists now visit the Indian pueblos to study the old Indian and Spanish types and the relics of the old Aztec civilization.

Government.—The State executive is a Governor, who is elected for a two-year term. The legislature consists of two chambers—a senate of 24 members and a house of representatives of 49 members. The legislature meets biennially in odd years and sessions are limited to 60 days. For local government the State is divided into 29 counties.

Officials.—State officials in 1922 were: Governor, Merrill C. Mechen; lieutenant-governor, Wm. H. Duckworth; secretary of state, Manuel Martenz; attorney-general, Harry I. Boumar; auditor, Ed. Safford; treasurer, O. A. Matson, and superintendent of education, John O. Conway. Officials entering into office in 1923 were: Governor, Jas F. Hinkle; lieutenant-governor, Jose A. Baca; secretary of state, Soledad C. Chacon; attorney-general, Milton J. Helmick; auditor, Juan N. Vigil; traveling auditor, W. F. Whittier; treasurer, O. A. Matson, and superintendent of Education, Miss Isabel L. Eckles.

Judiciary.—Members of supreme court, Hon. Frank W. Parker, chief justice; Samuel W. Bratton and C. M. Botts.

NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS, a State co-educational institution founded in 1889 and located at State College, N. M. In 1922-23 it had a faculty of 35 members, 392 students,

property valued at \$663,000, and an income of \$366,116. H. L. Kent, M.S., is president.

NEW MEXICO SCHOOL OF MINES, a State co-educational institution, founded in 1889 and located at Socorro, N. M. In 1922-23 it had a faculty of eight members, 85 students, property valued at \$217,790, and an income of \$68,958.21. E. H. Wells, B.S., is president.

NEW MEXICO STATE UNIVERSITY, a co-educational institution founded in 1889 and located at Albuquerque, N. M. In 1922-23 it had a faculty of 28 members and 770 students. Its campus and buildings were valued at \$670,000. It also had funds totaling \$101,000 and owns approximately 310,000 acres of land. Its income for the year was \$220,276.82. David S. Hill, Ph.D., LL.D., is president.

NEW ROCHELLE COLLEGE, a Roman Catholic educational institution for women, founded in 1904 and located at New Rochelle, N. Y. In 1922-23 it had a faculty of about 35 members, 470 students, and property valued at \$1,500,000. No income figures given. Rt. Rev. Monsignor Joseph F. Mooney, D.D., is president.

NEW SOUTH WALES. See AUSTRALIA.

NEW YORK, the Empire State, and the most populous in the Union, bounded on the north and west by Lake Erie, the province of Ontario, Lake Ontario and the province of Quebec, Canada, east by Vermont, Massachusetts and Connecticut, and south by the Atlantic Ocean, New Jersey and Pennsylvania. Its area is 49,204 square miles and in 1920 its population was 10,385,277. In 1920 the census reported 10,172,027 whites, 198,483 negroes, 9,214 Asiatics and 5,503 Indians. The population the same year included 2,786,112 foreign-born white persons, of whom 2,528,497 were 21 years old and over. Of these, 474,994 were born in Italy, 458,239 in Russia, 290,237 in Germany, 280,508 in Ireland, 224,799 in Poland, 138,279 in Austria and 120,299 in England. The citizenship status of the foreign-born whites of voting age in New York State by country of birth, as enumerated in 1920, was as follows:

COUNTRY	Total	Naturalized
All countries.....	2,528,597	1,153,813
Italy.....	474,994	139,330
Russia.....	458,239	182,139
Germany.....	290,237	203,307
Ireland.....	280,508	177,678
Poland.....	224,799	66,971
Austria.....	138,279	59,129
England.....	120,299	74,109
Canada.....	99,792	59,656
Canada-French.....	14,078	8,177
Hungary.....	71,413	28,701
Sweden.....	51,114	29,058
Rumania.....	36,230	18,226
Czecho-Slovakia.....	36,140	14,517
Scotland.....	34,155	19,007
France.....	29,345	15,370
Norway.....	25,445	11,917
Greece.....	22,907	3,993
Switzerland.....	14,521	8,563
Denmark.....	13,328	7,764
Netherlands.....	12,196	7,120
Spain.....	10,774	1,144
Finland.....	11,896	2,901
Lithuania.....	11,407	2,105
Jugoslavia.....	7,604	2,014
Syria.....	6,986	1,767
All other countries.....	45,837	16,337

Religion.—The principal Christian denominations have an aggregate church membership of 4,315,404. Of this grand total, 2,745,552 are Roman Catholics, 328,250 Methodists, 227,685 Episcopalians, 222,888 Presbyterians, 182,443 Baptists, 73,581 Lutherans, 73,991 members of the Reformed Church, and 65,021 Congregationalists.

Education.—Primary education is compulsory for all children between the ages of 7 and 16. Physical training was made compulsory in all State schools in 1916. In the primary schools of the State there are enrolled 1,744,758 pupils. Outside of New York City there are 55,732 teachers in elementary public schools. The State has 978 public high schools, with 8,705 teachers and 207,372 pupils. There are 10 public normal schools, with 371 teachers and 7,370 students, and 132 vocational schools, with 1,423 teachers and 76,250 pupils. The total expenditures on education average \$150,000,000 yearly. The State appropriation for education in 1922 was \$41,247,926.94. For higher education there are 132 universities, colleges, and professional and technical schools, including Columbia University, New York University, College of the City of New York, Cornell University, Syracuse University, University of Rochester, Union University, Colgate University, Hobart College, Vassar College, Fordham University, Niagara University, and scores of special schools, specializing in science, engineering, mechanics, etc. At West Point is the United States Military Academy.

Chief Cities.—The chief cities, with their populations in 1920, were: Albany, the capital, 113,344; New York, 5,620,048; Buffalo, 506,508; Rochester, 295,750; Syracuse, 171,717; Yonkers, 100,226; Utica, 94,156; Schenectady, 88,723; Troy, 72,013; Binghamton, 66,800; Niagara Falls, 50,760; Elmira, 45,305; Mount Vernon, 42,726; Poughkeepsie, 35,000; Auburn, 36,142; New Rochelle, 36,213; Watertown, 31,263; Oswego, 23,626; Cohoes, 29,987; Rome, 26,341; Kingston, 26,688; Gloversville, 22,026; White Plains, 21,031; Lockport, 21,308. In 1920 only 17.3 per cent of the population of the State was rural. In the same year the Indian reservations occupied 137 square miles of the area of the State and had an Indian population of 6,432.

Finances.—The balance at the beginning of the fiscal year 1922 was \$93,765,708.41. Receipts during the year amounted to \$153,242,723.91. Disbursements for the same period totaled \$172,943,706.21, leaving a balance on hand at the beginning of 1923 of \$74,064,726.11. The assessed value of real property in 1922 was \$15,141,722,139; of personal property, \$248,676,834. The total funded debt of the State amounts to \$236,024,000. On 1 Jan. 1920 the city of New York had a gross bonded debt of \$1,238,260,597.

Charities and Corrections.—At the beginning of 1923, the chairman of the State Hospital Development Commission reported more than 56,000 patients and inmates as wards of the State. These patients were costing approximately \$22,000,000 yearly. The following table shows the number of inmates in each class of institution:

INSTITUTION	Inmates
Fifteen insane hospitals (two criminal).....	39,391
Four hospitals for feeble-minded.....	5,521
One epileptic hospital.....	1,554
Seven reformatories.....	3,356
Two veterans' homes.....	605
Two schools.....	375
One tuberculosis institution.....	301
One hospital for children.....	200
Four prisons.....	4,741
Total.....	56,044

Agriculture.—The 14th census reported 193,195 farms in the State with an aggregate area of 20,632,803 acres, including 13,158,781 acres of improved land. The same year the total value of all farm property was \$1,908,483,201. Market gardening, fruit growing, sugar beet raising and tobacco are the principal crops. The chief crops, with their acreage, yield and value for the year 1922 were: Corn, 798,000 acres, 28,329,000 bushels, \$23,513,000; spring wheat, 21,000 acres, 336,000 bushels, \$396,000; winter wheat, 445,000 acres, 8,678,000 bushels, \$10,240,000; barley, 158,000 acres, 4,108,000 bushels, \$3,040,000; clover seed 11,000 acres, 28,000 bushels, \$280,000; oats, 1,059,000 acres, 31,770,000 bushels, \$16,203,000; buckwheat, 208,000 acres, 4,368,000 bushels, \$4,368,000; rye, 55,000 acres, 880,000 bushels, \$854,000; tame hay, 4,870,000 acres, 6,818,000 tons, \$96,134,000; beans, 93,000 acres, 1,302,000 bushels, \$4,948,000; potatoes, 340,000 acres, 37,400,000 bushels, \$22,440,000; tobacco, 2,000 acres, 2,500,000 pounds, \$814,000; apples, 36,000,000 bushels; peaches, 3,400,000 bushels, and pears, 3,200,000 bushels. On 1 Jan. 1923 there were in the State 510,000 horses, valued at \$58,650,000; 7,000 mules, valued at \$931,000; 1,678,000 milk cows, valued at \$105,714,000; 410,000 other cattle, valued at \$10,045,000; 532,000 sheep, valued at \$4,522,000 and 546,000 swine, valued at \$8,463,000. The wool clip of 1920 was 3,044,650 pounds. The census in 1920 placed the value of all farm crops that year at \$417,046,864. The State that year was second in the production of hay and grapes. It was also second in the quantity of buckwheat grown and was second in the value of dairy products which were valued at \$756,045,942. The State also led in the value of livestock products with \$225,465,739.

Mining.—The State has considerable mineral resources. Iron is mined in the Lake Champlain district, and near the Pennsylvania border petroleum and natural gas are produced. Graphite is also produced as are many of the baser minerals. The salt industry is important in Onondaga county. The output of gypsum in 1920 was valued at \$3,530,000. Portland cement was produced to the extent of 4,441,250 barrels in 1920, valued at \$7,700,406. The talc output was 62,495 tons, valued at \$750,000. Quarry products of granite, trap rock, marble, lime, limestone and sandstone were valued at \$6,988,735 in 1920. The value of bricks, pottery and tile produced the same year was \$13,000,000. The value of the natural gas produced was estimated at \$6,000,000.

Manufactures.—The last census of manufactures placed the value of the total manufactured products of New York State for the census year at \$8,867,004,906. The manufactured products of the State comprise almost every-

thing made in modern industry. The census reported 49,330 establishments, capitalized at \$6,012,082,567, employing 1,524,761 persons, who received in salaries and wages during the census year \$1,971,754,707. The cost of raw materials used in industry was \$4,943,213,919. The value of products was \$8,867,004,906, making the value added by manufacture, \$3,923,790,987. The chief industries are men's and women's clothing, printing and publishing, foundry and machine shop products, bread and bakery products, electrical machinery, apparatus and supplies, boots and shoes, knit goods, tobacco, cigars and cigarettes, ship building, photographic materials, paper and wood pulp, confectionery and ice cream, furniture, iron and steel, leather, condensed milk, chemicals, cars and general railroad shop repairs, silk goods, automobile bodies and parts, illuminating and heating gas, jewelry, brass, bronze and copper products, paper boxes, cotton goods, dyeing and finishing of textiles, lithographing, steam, gas and water engines, and cordage and twine.

Communications.—Over one-half the export and import trade of the United States passes through the port of New York. The Port of New York Authority was created to organize New York harbor into an economic and non-wasteful commercial agency through co-operation of the New Jersey with the New York authorities. In the year ending 30 June 1922, 5,201 vessels entered the port of New York, having an aggregate tonnage of 18,450,608. The State has a steam railroad mileage of 8,390 miles and 5,772 miles of electric railways. The canals of the State in use for commercial purposes have aggregate length of 638 miles. The State Barge Canal connects New York City with Buffalo by deep water route, 790 miles in length, and a minimum depth of 12 feet. It has a capacity of 20,000,000 tons per season.

Government.—The executive is the Governor who is elected for a two-year term. The legislature is composed of a senate of 51 members elected every two years, and an assembly of 150 members elected yearly. The legislature meets yearly in January. The question of a constitutional convention has to be submitted to the people every 20 years. New York sends two Senators and 43 Representatives to the Federal Congress. The State for local administrative purposes is divided into 62 counties. The cities are divided into three classes. The first class cities are those having over 175,000 inhabitants; second class, over 50,000 to 175,000, and third class, those having less than 50,000. Each city is incorporated by a charter under special legislation. The government of New York City is vested in a board of aldermen, elected for two years.

Officials.—State officials in 1922 were: Governor, Nathan L. Miller; lieutenant-governor, Jeremiah Wood; secretary of state, John J. Lyons; attorney-general, Charles D. Newton; comptroller, William J. Maier; treasurer, N. Monroe Marshall and commissioner of education, Frank P. Graves. The State officials entering into office in January 1923 were: Governor, Alfred E. Smith; lieutenant-governor, George R. Lunn; secretary of state, James A. Hamilton; attorney-general, Carl Sherman; comp-

troller, James W. Fleming; treasurer, George Kent Shuler and commissioner of education, Frank P. Graves.

NEW YORK BARGE CANAL. See CANALS.

NEW YORK, College of the City of, a non-sectarian institution, co-educational, except in preparatory and day college of liberal arts, founded in 1848 and located at New York, N. Y. In 1922-23 it had a faculty of 636 members, 14,316 students, property valued at \$8,306,930.81 and an income of \$1,072,668.13 (institution is supported by New York City). Sidney E. Mezes, LL.D., is president.

NEW YORK PORT AUTHORITY, a body corporate and politic, created in 1921 under the terms of the compact between the States of New York and New Jersey, and consisting of six commissioners—three from New York and three from New Jersey—for the better co-ordination of the terminal, transportation and other facilities of commerce in, about and through the port of New York. The legislatures of both States authorized in 1921 commissioners to sign the compact for the creation of the Port of New York District and the creation of the Port of New York Authority. The compact was signed 30 April 1921 by commissioners from New York and New Jersey and was subsequently approved by Congress and the President. This compact vested broad powers in the Port Authority which were to become effective as soon as the two States should have agreed upon and adopted a comprehensive plan. The port district, as defined in the compact, contains 105 organized municipalities. It embraces a population of about 8,000,000 people; is served by 12 trunk lines of railway, which bring in and take out of or through the port over 75,000,000 tons of freight per annum. An immense number of foreign and domestic steamships, not less than 8,000, annually bring to or take from the port over 45,000,000 tons of freight. There is also a very large local waterborne traffic within the port. The comprehensive plan was worked out by the commissioners and their engineers during 1921 and submitted to the legislatures of New York and New Jersey at the sessions of 1922. The New Jersey legislature approved the plan 20 Feb. 1922 and the New York legislature the day following. Congress approved the plan in June and the President on 1 July 1922. By this preliminary legislation the powers and jurisdiction of the Port Authority were defined and the general plan approved. The comprehensive plan for the co-ordination and extension of the facilities of the Port of New York proceeds along the following fundamental principles: (1) That terminal operations within the port district, so far as practicable, should be unified; (2) That there should be consolidation of shipments at proper classification points so as to eliminate duplication of effort, inefficient loading of equipment and realize reduction of expenses; (3) That there should be the most direct routing of all commodities so as to avoid centres of congestion, conflicting currents and long truck-hauls; (4) That terminal stations established under the plan should be union stations, so far as practicable; (5) That the process of

co-ordinating facilities should as far as practicable adapt existing facilities as integral parts of the new system, so as to avoid needless destruction of existing capital investment and reduce as far as may be possible the requirements for new capital; and endeavor should be made to obtain the consent of the States and local municipalities within the port district for the co-ordination of their present and contemplated port and terminal facilities with the whole plan; (6) That freight from all railroads must be brought to all parts of the port wherever practicable without cars breaking bulk, and this necessitates tunnel connection between New Jersey and Long Island, and tunnel or bridge connections between other parts of the port; (7) That there should be urged upon the Federal authorities improvement of channels so as to give access for that type of waterborne commerce adapted to the various forms of development which the respective shore fronts and adjacent lands of the port would best lend themselves to; (8) Highways for motor truck traffic should be laid out so as to permit the most efficient interrelation between terminals, piers, and industrial establishments not equipped with railroad sidings and for the distribution of building materials and many other commodities which must be handled by trucks; these highways to connect with existing or projected bridges, tunnels and ferries; (9) Definite methods for prompt relief must be devised that can be applied for the better co-ordination and operation of existing facilities while larger and more comprehensive plans for future development are being carried out.

In 1922 the commissioners held several public hearings and conferred with committees of railroad presidents, official and civic bodies and representatives of business interests. In May the Port Authority took emergency action with reference to an embargo against shipment of potatoes to New York placed by the Pennsylvania Railroad, and through the Interstate Commerce Commission forced that road to raise the embargo. In December 1922 the same commission called on the railroads entering the port district to co-operate with the Port Authority in carrying out the plan of development. The roads opposed the unification of their terminals and other features of the plan. At a public hearing in New York on 5 April 1923 the roads questioned the constitutionality of the acts instituting the Port Authority.

NEW YORK STATE COLLEGE OF FORESTRY, a State educational institution for men, founded in 1911 and located at Syracuse, N. Y. In 1922-23 it had a faculty of 30 members, 330 students, property valued at \$425,067.53 and an income of \$19,870. Franklin Moon, M. F., is dean.

NEW YORK STATE LIBRARY SCHOOL, a State co-educational institution founded in 1887 and located at Albany, N. Y. In 1922-23 it had a faculty of 12 members, and 101 students. The school is open only to college graduates desiring to make librarianship a profession. The minimum course is two years. The school confers the degrees of bachelor of library science and master of library science. James I. Wyer, director of the New York State Library, is also director of the school.

NEW YORK UNIVERSITY, a non-sectarian, partly co-educational institution, founded in 1831 and located in New York City. In 1922-23 it had a faculty of 708 members, 12,910 students, property valued at \$5,436,722.72 and an income of \$2,109,775.22. Elmer Ellsworth Brown, Ph.D., LL.D., is chancellor.

NEWSPAPERS. The total number of newspapers, magazines and periodicals published in the United States and territories varies very slightly from year to year. The 1919 census total was 20,887 publications in 10,025 towns and cities. The *Editor and Publisher* of New York took a census at the close of 1922, and made the figures 20,854 (a loss of 33), in 10,080 towns and cities.

From its very complete tables most of the following figures showing 55 more towns are taken. The general condition of the newspapers, as reflected in advertising and circulation, is also nearly static. The 1919 census reports 2,382 daily newspapers, but the canvass of the *Editor and Publisher* found but 2,033, three and a half years later. Apparently some 349 have died or been merged, or failed to report their existence. There were 426 morning newspapers, with a total circulation of 10,809,619 daily; 1,607 evening newspapers, with a total circulation of 18,898,332, and 546 Sunday newspapers, with a total circulation of 19,676,727, these all being averages for the year 1922. The average advertising charge of morning newspapers per agate line was shown to be \$2.52 per million circulation, evening papers, \$3.40 per million, and Sunday papers, \$2.33 per million. The morning papers increased in circulation during 1922, 6.6 per cent., the evening 3.4 per cent, and the Sunday issues 3.3 per cent. The New York City daily newspapers printed 160,628,884 lines of advertising in 1922, a figure exceeded only in 1920, when it was seven-tenths of 1 per cent greater.

The distribution of newspapers and periodicals throughout the United States and Canada at the close of 1922, is shown in the following table:

SECTION	Number of towns	Number of publications
New England.....	439	1,060
New York.....	472	2,144
Middle Atlantic States.....	655	1,881
Southern.....	2,118	3,667
Middle West.....	1,996	4,576
Western.....	3,444	5,492
Pacific slope.....	913	1,871
Alaska and Territories.....	43	165
Canada.....	760	1,504
Totals.....	10,840	22,358
1921 totals.....	10,780	22,353

The average circulations of the great dailies during 1922 is interesting for comparison:

NEW YORK	
<i>American</i> , morning.....	329,839
<i>American</i> , Sunday.....	1,028,278
<i>Journal</i> , evening.....	622,749
<i>News</i> , morning.....	522,635
<i>News</i> , Sunday.....	348,711
<i>World</i> , morning.....	351,260
<i>World</i> , Sunday.....	576,777
<i>World</i> , evening.....	272,479
<i>Times</i> , morning.....	330,977
<i>Times</i> , Sunday.....	510,835

CHICAGO	
<i>Herald and Examiner</i> , morning.....	354,147
<i>Herald and Examiner</i> , Sunday.....	666,835
<i>Tribune</i>	517,184
<i>Tribune</i> , Sunday.....	790,552
<i>News</i>	371,871

BOSTON	
<i>Post</i> , morning.....	376,246
<i>Post</i> , Sunday.....	373,945
<i>Globe</i> , Sunday.....	321,871

PHILADELPHIA	
<i>Bulletin</i>	485,145
<i>Bulletin</i> , Sunday.....	382,814

LONDON, ENGLAND	
<i>Mail</i>	1,818,000
<i>Mirror</i>	1,025,000
<i>Express</i>	850,000
<i>Sketch</i>	835,000
<i>Star</i>	677,000

There were in the United States in 1922, besides the daily and weekly newspapers cited, 94 tri-weeklies, 532 semi-weeklies, 102 fortnightlies, 342 semi-monthlies, 3,510 monthlies, 120 bi-monthlies, 410 quarterlies, and 80 irregulars.

Canada has 26 morning newspapers, 112 evening and seven Sunday issues besides 973 weeklies. The total daily average circulation of the morning papers was 492,399, the evening, 1,262,984, and the Sunday 270,439. The total combined circulation of all periodicals of every class, in the United States and Canada, was estimated to be 225,000,000 per issue. The subscription receipts of all these were estimated at \$200,000,000 a year, and the advertising income at \$390,000,000.

During the year there was a continuance of the tendency of late years of the disappearance from publication of some of the great journals in large cities. By 15 February, Saint Louis, Cleveland and Detroit had each only one morning newspaper, Chicago two, and Pittsburgh two. The causes assigned were the increased political independence of the reading public, and the consequent passing out of the purely party organ, the increasing standardization of the daily press of the country through the service of the Associated Press. From the latter it follows that of two papers in a city, printing the same news, that the one with the better business management, or that one possessing some unique qualities of interest will survive.

One of the noteworthy events of 1922 was the sale of the London *Times* to John Walter and Major John Jacob Astor, and the expressed intention of the new owners to maintain the highest traditions of *The Times* and to insure its continuance as a national institution, "conducted solely in the best interests of the nation and Empire." It was said that the price paid for the shares held by the late Lord Northcliffe was £1,390,000.

In Pittsburgh, Pa., the *Dispatch* was sold 15 Feb. 1923 to other Pittsburgh papers—the *Post*, *Sun*, *Gazette-Times* and *Press*. The *Leader* of the same city was sold to the same group and ceased publication.

In November, Mr. W. R. Hearst purchased the Washington *Herald*. In that city the afternoon paper, the *Times*, is also the property of Mr. Hearst.

In November also came the announcement from Philadelphia of the foundation of a na-

tional correspondence school of journalism by the National Woman's Christian Temperance Union, with an advance enrollment of 300 women, from every State in the Union.

NEW ZEALAND, Dominion of, a self-governing British state in the South Pacific, comprising the two principal islands, the North and South islands, Stewart island and some outlying islands. The island group is 1,000 miles in length by 180 in width at the broadest part, 1,200 miles from the coast of Australia. The area is 103,581 square miles; population on 30 June 1921, 1,221,447, exclusive of Maoris (52,554) and residents of Cook and other annexed islands (13,269). The population of the chief cities and towns in 1921 was as follows: Auckland, 157,757; Wellington, 107,488; Christchurch, 105,670; Dunedin, 72,255; Hamilton, 13,798; Gisborne, 14,450; Napier, 17,187; Hastings, 12,990; Wanganui, 23,523; North Palmerston, 16,885; Invercargill, 19,210; Timaru, 15,507; New Plymouth, 12,645; Nelson, 10,632, and Grey Valley boroughs 8,366. Births in 1920 numbered 29,921, including 1,424 illegitimate births. Deaths the same year numbered 12,109, leaving an excess of births over deaths of 17,812. In 1920, 44,062 persons immigrated to the Dominion and 32,924 emigrated, leaving an excess of immigration over emigration of 11,138.

Religion.—There is no State-aided religion. The chief denominations and their adherents are the Church of England, 459,021; Presbyterian, 260,659; Roman Catholic, 151,605; and Methodists 106,024. Others in order of numbers are the Baptists, Salvation Army, Brethren, Church of Christ, Congregationalists, Jews (2,341).

Education.—At the beginning of 1921 there were in the Dominion, 2,437 primary schools, with 6,335 teachers and 199,802 children on the rolls and an average attendance of 171,102. Education is free and compulsory between the ages of 7 and 14 years. Instruction in the primary schools is secular only. There are 59 district high schools with 110 teachers and 2,157 students. In the technical high schools there are 2,766 students. There are also 35 incorporated or endowed secondary schools with over 400 teachers and 9,196 students. For higher education there are the Otago University at Dunedin with 55 faculty members, Canterbury College at Christchurch with 29 faculty members, Auckland University College with 24 faculty members, and Victoria University College at Wellington with 24 members of the faculty. Students in attendance at these institutions number 3,672. The University of New Zealand is merely an examining body, in receipt of an annual grant of 4,000 pounds sterling. In 1921 there were 119 native village schools with 263 teachers and 5,508 pupils. Education expenditures for all kinds of instruction in 1921 totaled 3,224,000 pounds sterling.

Agriculture.—About two-thirds of the area of the Dominion are arable. There are 17,000,000 acres under forest. In 1921 wheat was grown on 219,985 acres and yielded 6,872,000 bushels; oats was grown on 147,559 acres and yielded 5,225,000 bushels; barley was grown on 46,802 acres and yielded 1,587,000 bushels. Live stock in 1921 numbered 334,000 horses, 3,113,000 head of cattle; 23,236,000 sheep, and 342,000 swine.

There are 132,249 persons engaged in agriculture, pastoral and dairying. The dairy season for the year 1921-22 was a record one from the point of view of production. The total output of butter for export was 46,000 tons, an increase of 30 per cent over that of the year previous. The output of cheese was 60,000 tons, an increase of 12 per cent over the year previous. The total value of the exports of butter and cheese in 1922 amounted to \$16,501,074.

Manufactures.—In 1920 there were reported 4,357 manufacturing establishments, employing 64,951 persons, capitalized at 33,436,120 pounds sterling and making products of an aggregate value of 69,780,296 pounds sterling. The 20 leading industries with the value of their products in 1920 are the following: Meat freezing and preserving £16,364,394; butter and cheese factories, £12,495,670; tanning, fellmongering and wool scouring, £4,941,998; sawmills, sash and door factories, woodware, £3,622,266; grain mills, £2,807,916; printing and bookbinding, £2,639,362; clothing and waterproof factories, £2,029,579; boot and shoe factories, £1,443,436; tailoring establishments, £1,375,276; gas works, £1,189,754; woolen mills, £1,143,265; engineering establishments, £1,250,567; breweries and malt houses, £1,084,121; biscuit factories, £1,077,956; fertilizer works, £996,319; furniture and cabinet making, £990,233; motor and cycle works, £821,810; agricultural machinery, £519,040; tinned ware and sheet metal works, £493,511; electric light supply works, £647,071.

Mining.—Gold, silver and tungsten ores are mined and exported. In 1920, exports of gold reached 212,973 ounces, valued at £883,748; silver totaled 369,400 ounces, valued at £87,665; and tungsten, 10 tons valued at £1,378. In the same year the Dominion exported 80,088 tons of coal and consumed 1,763,617 tons. The value of the coal exported and used domestically that year was £1,892,126. In 1922 the Dominion became an importer of coal instead of an exporter, home consumption having at last exceeded the domestic supply.

Commerce.—The total imports in 1920 were valued at £61,595,828 and exports at £46,441,946. These totals decreased about 15 per cent in 1921. A further decrease was noted the first six months of 1922 after which a recovery set in and by December the volume of exports for the 12 months of 1922 amounted to £42,720,894 while imports for 11 months were £36,455,000. The chief articles imported were clothing, iron and steel, metal manufactures, motor cars, tobacco and cigars, books, paper and stationery, machinery, sugar, boots and shoes, textiles, tea, wines and spirits, drugs and chemicals, fruits, oils and leather and leather manufactures. Exports included agricultural produce, wool, meat, kauri gum, tallow, butter, cheese, hides and skins, timber and gold. The continued decline in the number of sheep in the Dominion is causing alarm. It is attributed to the growth of the dairying industry in the South Island, in districts hitherto devoted to sheep raising. The extension of the grain growing area is also believed to have affected the number of sheep raised. Estimates of New Zealand's trade with the United States for 1922 indicate a favorable balance of about \$8,500,000 for the United States.

New Zealand's exports to the United States in 1922 to 21 September totaled \$8,497,254. It is estimated that they would aggregate about \$11,500,000 for the full year. With imports from the United States totaling \$19,967,225 for the 12-month period, the above-mentioned credit balance is apparent. In 1921 New Zealand exported to the United States products to the value of \$9,839,291 and imported products from this country to the value of \$28,071,813. Exports of wool in 1922 were valued at £11,882,553; exports of frozen meats at \$3,490,192; exports of butter at £1,120,200; exports of cheese at £1,161,196.

Communications, Shipping, etc.—There are 384 steamers registered of 64,837 tons and 163 sailing vessels of 21,223 tons. The clearances at the ports in 1920 were 707 of 1,976,255 tons. There are in the Dominion 3,147 miles of railways, of which all but 138 miles are state-owned. The gross receipts from the state railways in the fiscal year 1921-22 amounted to £6,643,591 and the working expenses to £6,237,727, leaving a net revenue of £405,864 or a trifle over 1 per cent on the capital invested in the lines. The money for their construction having been borrowed at an average rate of four per cent, the lines were clearly run at a loss. However, the lines had been built primarily by the state for the development of the country and the encouragement of land settlement and production.

Economics and Finance.—The year ended 31 March 1922 was a year of adversity for the Dominion. An enormous decline in the prices of the chief exports had reduced the national revenue and forced the Government and the citizens to undertake a policy of retrenchment. Wages had to be adjusted, inflated land values had to be reduced. Unemployment did not assume important dimensions; no important commercial failures occurred, and the upward movement of produce prices came soon enough in the year to save the farmers from disaster. In August the Premier presented the following budget statistics to the Parliament.

	1913-1914	1921-1922
Revenue.....	£12,229,661	£28,127,007
Expenditure.....	11,825,864	28,466,838
Public debt.....	94,689,855	219,054,383
Interest charges.....	2,871,512	10,875,185
War pensions.....		1,726,174
Other pensions.....	473,330	1,069,277

For the first time in a generation the expenditure exceeded the revenue in 1921-22.

Pensions.—New Zealand having been one of the pioneers in the matter of old age and other pensions there are given herewith the several classes of pensions in force there in July 1921:

CLASS	Number in force	Annual value	Average pension
Old age.....	20,075	£747,794	£37
Widows.....	3,448	199,984	58
Maori war.....	778	38,122	49
World war.....	30,900	1,698,500	55
Miners.....	480	30,240	63
Influenza epidemic.....	812	67,396	83

Defense.—Under the Dominion Defense Act there is a gradual military training for every male New Zealander between the ages of 12 and 25 years, with limited service in the reserve up to the age of 30. The Territorial Force in 1922 had a strength of 23,188. The naval force consists of the training ship *Philomel* and the cruiser *Chatham*.

Government.—Attached to New Zealand are the Auckland islands. Area, 330 square miles and uninhabited. There is a depot of provisions and clothing for the use of shipwrecked sailors on the largest island. The Chatham Islands, area, 375 miles, pop. 445, also belong to the Dominion, as do the Cook and other South Pacific islands, including Rarotonga, Mangaia, Atiu, Aitutaki, Mauke, Mitiaro, Hervey islands, Nieu, Palmerston, Penrhyn, Manahiki, Rakaanga, Danger, Suwarrow. Aggregate population, 13,209. Aggregate area, 280 square miles. The legislative power of the Dominion is vested in a Governor-General and a General Assembly of two chambers—a Legislative Council and a House of Representatives. The Legislative Council has 41 members at present mostly appointees, but there are provisions to make this chamber elective within the next seven years. There are 80 members in the House of Representatives, including four Maoris. Members are elected by the people for terms of three years. The present Parliament, elected, December 1919, has 48 members of the Reform Party, 18 Liberals, 10 Labor, 4 Independents. The government supporters number 50 and the opposition 30. The Prime Minister in 1922 was Right Hon. W. F. Massey P.C. The Governor-General and Commander-in-Chief in 1922 was His Excellency Viscount Jellicoe of Scapa.

This colony received the largest total of new immigrants in 40 years; 14,500 coming from Great Britain and other parts of the empire. Of this total 5,286 were assisted by the British government and almost an equal number by that of New Zealand. A bill of complaint was sent to Wellington stating that New Zealand's control of former German Samoa was a hopeless failure. The Minister of External Affairs was sent to the island to investigate and reported that prohibition was the cause of most of the prevalent unrest. It was regretted that this cause could not be remedied because it was imposed under the terms of the mandate by which New Zealand assumed control of former German Samoa. A citizen's association of whites adopted a resolution on 1 April requesting the government to hold a plebiscite of the taxpayers to determine whether the prohibition now enforced in Samoa should be lifted.

On 18 August the New Zealand Parliament ratified the Washington treaties. The establishment of a fuel oil station by the United States Shipping Board at Pago Pago, Samoa, was believed to foreshadow competition in the Australian and New Zealand ship routes as no oil had hitherto been available on these routes beyond the Panama Canal. A favorable trade balance was reported for the six months ended 30 June 1922 amounting to £10,703,894, compared with £1,006,006 for the same period of 1921. This was largely obtained by economizing on imports, which fell off £12,002,395 or about

40 per cent, whereas exports amounted to £26,892,366, a decrease of only £292,495. On 30 October, the Premier, Mr. Massey, issued an election manifesto in which he emphasized the necessity of an arrangement with Great Britain and the other British Dominions for naval protection in the Pacific. At the same time he advocated a vigorous immigration policy and deprecated the rising tide of revolutionary Socialism. Parliament ended its session on the last day of October with the expectation of a general election taking place in December. The leader of the Liberals, Mr. Wilford, outlined his policy for a united empire and constitutional methods and the Labor Party issued a manifesto reaffirming the international character of its political faith. On 10 November the locally-manned shipping was tied up by a strike in protest of the award of the Court of Arbitration which reduced wages slightly.

NIAGARA UNIVERSITY, a Roman Catholic educational institution for men, founded in 1856 and located at Niagara Falls, N. Y. In 1922-23 it had a faculty of 26 members and a student enrollment of 340. Figures showing the value of the institution's property and its income not given. Very Rev. William E. Katzenberger, C.M., is president.

NICARAGUA, a republic of Central America. Area 49,200 square miles; population, 638,119; capital, Managua (60,342). The state borders on the Atlantic for a distance of 300 miles and on the Pacific for a distance of about 200 miles. The people are of mixed Indian and Spanish blood with an admixture of negroes on the eastern coast. The chief towns other than the capital named above are: Leon (47,234); Granada (21,925); Matagalpa (32,271); Masaya (17,287); Jinotega (16,990); Chinandega (14,415); Esteli (10,583); Matapa (10,561); Boaco (14,342); Diriamba (11,151); Corinto (7,567), and Bluefields (4,706).

Education and Religion.—There are in the Republic 356 elementary schools and 10 secondary schools. There are three universities—Leon, Managua and Granada and in addition several state normal schools. Roman Catholicism is the prevailing religion. This church has an archbishop and three bishops.

Production.—Agriculture, lumbering and mining are the chief occupations of the inhabitants and the chief sources of the national wealth. Bananas, coconuts, plantains, oranges and pineapples, rice, wheat and tobacco are the chief crops raised. The coffee crop averages 22,500,000 pounds yearly. There exists a great divergence in standards of living between the eastern and western parts of the country. In the east most of the foodstuffs are imported from the United States and in the west a sufficiency of food is raised for the domestic consumption. The forest products are considerable, consisting of mahogany and cedar, dyewoods, gums and medicinal plants. Cattle raising is increasing, there being now about 1,250,000 head of cattle in the republic. Several placer gold mines are worked by British and American capital. Gold exports in a recent year amounted in value to £185,125. Silver, copper and precious stones are found also.

Commerce.—Imports in 1920 were valued at £2,772,877 and exports at £2,157,669. The value of the chief imports in the year named, was: Cotton goods, \$5,242,188; chemicals, \$581,509; iron and steel, \$754,074; flour, \$665,660. The value of the chief exports was: Coffee, \$2,874,140; bananas, \$817,142; lumber, \$1,953,768; hides and skins, \$316,798, and sugar, \$2,345,904. Of the imports the United States furnished \$11,247,588; the United Kingdom, \$1,634,623. Of the exports the United States took \$9,294,809; France, \$546,043, and the United Kingdom, \$306,491.

Communications.—The chief ports on the west coast are Corinto and San Juan del Sur, through which pass about two-thirds of the foreign commerce of the country. On the east coast the chief ports are Bluefields, Cap Gracias, Las Perlas and San Juan del Norte. Clearances at all ports in 1920 were 846 vessels of 460,779 tons. Several good roads are under construction, about 200 miles being completed. The single line of railway has a length of 171 miles. It runs from Corinto to Leon, Managua and Granada with two short branch lines. There is a private line of 20 miles near Rio Grande on the Atlantic Coast, the property of a fruit plantation.

Finance.—The budget estimates for 1922 contemplated a revenue of £677,105 and an expenditure of £559,704. The total debt of the republic in 1922 was \$951,580.

Defense.—The standing army numbers 2,000 officers and men, which in war time is capable of being raised to 7,000 men. Military service is compulsory. Naval defense consists solely of a patrol boat with a crew of 25 men and mounted with a machine gun. It is assigned to the Pacific littoral.

Government.—The executive power is vested in a President elected for four years. The legislative power resides in a bicameral Congress. The Senate has 13 members elected for six years. The lower chamber has 40 members elected by universal suffrage for four years. The President exercises his functions through a council of Ministers. The President in 1922 was Dr. Diego Manuel Chamorro. In 1916 a treaty was concluded between the United States and Nicaragua under the terms of which the United States acquires the canal route through Nicaragua and a naval base in the bay of Fonseca on the Pacific Coast and Corn island on the Atlantic Coast for the sum of \$3,000,000.

History.—On 22 Feb. 1922 the *Gaceta Oficial* published the texts of concessions, noteworthy here inasmuch as one of them authorized prospecting for oil and natural gases in the departments of Bluefields, Chontales, and Nueva Segovia; another, "anywhere in the Republic." On 7 March, at Managua, 2 American marines received prison sentences for killing native police 8 Dec. 1921. In April it was stated that the government had authorized the Tropical Radio Telegraph Company, organized under the laws of Delaware, U. S. A., to operate wireless stations in or near Managua, Bluefields, Cape Gracias a Dios, and other places in the Republic. On 21 May a band of rebels under command of Gen. Arcenio Cruz seized the government fort called La Loma, near the capital; but almost

immediately gave it up to American Marines, who returned it to the government troops. In July it was announced that the city of San Juan del Norte had been made a free port; in August, that a 15-year contract for a freight and passenger hydroplane service on Lake Managua and the San Juan River had been approved by the President. On 19 and 20 August the Presidents of Honduras, Nicaragua and Salvador, with their respective Ministers of Foreign Affairs, met on board the U. S. S. Tacoma, in the Gulf of Fonseca. The Ministers of the United States in the three countries named were also present. A treaty was then and there drawn up and signed, witnessing agreement as follows: In view of the differences of opinion which had arisen as to the General Treaty of Peace and Amity signed in Washington by the five republics of Central America on 20 Dec. 1907, the Executives of Honduras, Nicaragua and Salvador declared that the three states over which they presided should regard the said treaty as being in force in everything that affects the relations maintained by the three republics. Moreover, the three signatory Presidents would call a conference to be attended by the respective plenipotentiaries of the five governments of Central America for the purpose of deciding upon measures which would tend to make really practicable, in the future, the political unification of Central America. Beginning on 4 December, the conference just referred to took place in the building of the Pan-American Union, Washington. It was said in the *Bulletin* of that Union (January 1923), that the conference was the direct response to the invitation President Harding extended, by the Secretary of State, to the Presidents of the five Central American republics. But the real genesis of that significant conference dealing with Central American affairs is found in the meeting, "at the request of the President of Nicaragua," on board the *Tacoma*, those August days. See also CENTRAL AMERICAN CONFERENCE.

MARRION WILCOX.

NICHOLS, Edward Hall, American surgeon: b. Reading, Mass., 6 Jan. 1864; d. Boston, Mass., 12 June 1922. Graduating from Harvard in 1886, he received the degree of A.M. and M.D. in 1892 from the same university. He was connected with the Boston City Hospital as executive assistant and assistant superintendent from 1892-94, and in 1896 went to the Harvard Medical School, serving as assistant pathologist, demonstrator of surgical pathology, instructor, assistant professor in surgical pathology and surgery, associate professor, and after 1916 until his death as clinical professor of surgery. He was director of the cancer laboratory of the Croft Research Fund at Boston from 1899-1905, and in medical charge of the Harvard football team after 1904. As surgeon-in-chief to the first Harvard surgical unit, he saw service in France with the British army in 1915. In 1917 he was major of the Medical Officers' Reserve Corps, and assigned to the United States Base Hospital No. 7 as chief surgeon. He went again to France in July 1918, remaining there until January 1919, and soon afterwards was promoted to lieutenant-colonel of the Medical Corps. He was a fellow of the

American Academy of Arts and Sciences, also of the American College of Surgeons, and a member of the American Surgical Society, the Nu Sigma Nu Society and the Phi Beta Kappa. He was the author of numerous articles pertaining to surgery.

NICK CARTER. See DEY, FREDERICK VAN RENSSELAER.

NICKEL. The production of nickel oxide in the United States in 1918 was 45,886 tons; in 1920 it fell to 28,000 tons, and in 1921 to 5,200 tons. These figures tell the story of the demoralization in the industry. Most of the world's nickel is mined in the Sudbury district of Ontario, Canada, but a good deal of it is normally refined in the United States. The Canadian production was 30,700 short tons in 1920, valued at \$24,534,000, and 9,650 short tons in 1921, valued at \$6,753,000. A partial resumption of activity awaits the demand for nickel as alloy. In 1922 the United States exported 4,500 tons of nickel oxide and matte, of the value of \$1,100,000; also nickel and nickel articles valued at \$350,000.

NIGER TERRITORY, French. See FRENCH WEST AFRICA.

NIGERIA (officially "The Colony and Protectorate of Nigeria"), a British possession in West Africa comprising an area formerly under separate administrations. The seat of government is at Lagos. The area is about 332,000 square miles with a population of 16,250,000. Slave holding formerly existed but was abolished in 1917. Mohammedanism is prevalent, but there are several Christian missions at work. There are in the southern province 1,624 schools of all grades with about 123,776 pupils, including 43 government schools with 6,054 students, 158 assisted schools with 26,291 pupils and 1,443 unassisted schools with 84,444 pupils in attendance. The northern provinces have 116 schools with about 4,000 pupils and 31,000 Mohammedan schools with 210,000 pupils. The revenue in 1920 was reported as £6,819,274 and the expenditure at £6,493,523. The debt was reported at the same time as £10,245,593. The chief products of the colony are palm oil, kernels, rubber, ground nuts, ivory, hides, live stock, feathers, cotton, cocoa, coffee, and crude drugs. Iron, lead and tin are worked and there is a colliery now in operation in the south. Imports in 1920 were valued at £25,216,407 and exports at £16,987,018. In that year there entered the ports of the colony 1,434,222 tons of shipping. The chief imports were cotton goods, and coopers stores; the chief exports: Palm kernels, oil, raw cotton, tin ore, cocoa, hides and skins. There are 1,126 miles of railways in operation and several miles of line are under construction. There is a wireless station at Lagos. There is a mail service to Liverpool and Calabar.

NIKISCH, nē kish, Arthur, Hungarian orchestral conductor: b. Lebenyi Szent Miklos, Hungary, 12 Oct. 1855; d. Leipzig, Germany, 23 Jan. 1922. Regarded by most critics as the greatest conductor of his day and by some as the greatest of all time, Nikisch, for many years before his death, had been an outstanding figure in the musical world. He had achieved distinction not only as a wielder of the baton, but also

as a violinist and pianist, especially as a pianoforte accompanist; at the age of 40 he had been made conductor of the famous Gewandhaus concerts at Leipzig; at different times he had directed many of the great orchestras of the world; he had toured practically every civilized country on the globe and his fame was known to music lovers everywhere. Heralded as a musical prodigy, he appeared in public for the first time as a pianist when he was but 8 years old. In 1866, at the age of 11, he entered the Vienna Conservatory where he studied violin, composition and piano under Hellmesberger, Dessoff and Schener, respectively. While a student, he composed a symphony and other music. He left the Conservatory in 1873, and for a while was engaged as a first violinist with the Vienna Royal Opera Orchestra. In 1877 he became assistant director of the Leipzig Opera and two years later he was made chief director. Thereafter his rise to fame was rapid. Frequently conducting without a score, he displayed such marvelous skill with the baton and his success as an interpreter and producer of not only the more modern types of music but of the classical masterpieces as well was so marked that in 1889 he was called to the United States as director of the Boston Symphony Orchestra, succeeding Wilhelm Gericke. He remained as conductor of the last named organization until 1893, when he went to Budapest as director at the Royal Opera House. In 1895 he succeeded Reinecke as conductor at the Leipzig Gewandhaus and also as director of the Conservatoire. He retained the latter position for only a short time, but he held the conductorship at the Gewandhaus, together with that of the Berlin Philharmonic Orchestra, until his death. At the head of the latter he toured Europe in 1897. He conducted with great success in London in 1902, 1904-06, and in 1912 toured the United States with the London Symphony Orchestra. Moscow and Petrograd were common ground to him. His last tour was to South America. Of him one of his biographers said at the time of his death: "While Richter might be regarded as the first post-Wagnerian conductor, Nikisch is generally held to be the greatest, and, if that is held to be true, he must be reckoned so far as the greatest conductor the world has seen."

NILSSON, CHRISTINE, Swedish opera singer: b. Wexio, Sweden, 20 Aug. 1843; d. Stockholm, 22 Nov. 1922. She was the daughter of a small farmer on the estate of Count Hamilton and her beautiful voice attracted the attention of the Baroness Leuhussen, who had been a singer and who gave her some lessons. She was afterward instructed by Franz Berwald and in six months sang before the Swedish court. The Baroness Leuhussen then took her to Paris, where she studied with Wartel, the famous tenor. She made her debut at the Théâtre Lyrique, Paris, on 27 Oct. 1864, as Violetta in a French version of 'La Traviata,' and she remained at this theatre three years. On 8 June 1867, she made her first appearance in London with enormous success, sang at the Birmingham Festival in oratorio, and became established as a popular favorite. She appeared as Ophelia in the first performance of Ambroise Thomas's 'Hamlet' at the Paris opera 9 March

1867. In 1870 she toured in the United States under Maurice Strakosch and several seasons thereafter, with brilliant success. From 1872-77 Madame Nilsson sang at Drury Lane and Her Majesty's Theatre, London. She toured in Sweden, Russia, Austria, Spain and the United States. She retired on 20 June 1888, but appeared once more at Sims Reeves's retirement, 11 May 1891. Her voice was pathetic and sentimental, very sweet and even with a range of three octaves. At Rossini's advice she rarely used the extreme upper notes on account of the strain. Her great parts were Marguerite in 'Faust,' Mignon, Ophelia, Elsa, Elvira, Violetta, Juliette and the countess in 'Figaro.' She had charming manners and in her early days a naïveté which captured everyone. Madame Nilsson was married twice; on 27 May 1872, to M. Auguste Rouzeaud in Westminster Abbey; and after his death to the Count Casa di Miranda in 1887.

NOBEL PRIZE AWARDS. The Nobel Prize in physics for 1921 was awarded to Dr. Albert Einstein, of Germany, whose studies in relativity created such wide-spread discussion; that for 1922 went to Professor Neils Bohr of Copenhagen. The Prize in literature for 1922 was awarded to Jacinto Bonavente y Martinez, the second writer of his nation so honored by the Swedish Academy, Jules Echegaray being the first Spaniard to receive the Prize in literature. The Peace Prize was awarded to Dr. Frithiof Nansen for his work as League of Nations Commissioner in relieving the starving populations of Russia and Asia Minor and for his endeavors to promote the brotherhood of nations. The Chemistry Prize for 1922 was awarded to F. W. Aston of England. The value of each prize averages \$40,000. Nobel awards have been made to the following Americans: Theodore Roosevelt (Peace Prize 1906); A. A. Michelson (Physics Prize 1907); A. Carrel (Prize in Medicine 1912); Elihu Root (Peace Prize 1912); T. W. Richards (Chemistry Prize 1914), and Woodrow Wilson (Peace Prize 1918). No American has been awarded the Prize in Literature.

NON-PARTISAN ASSOCIATION FOR THE LEAGUE OF NATIONS. See PEACE AND ARBITRATION, INTERNATIONAL.

NON-PARTISAN LEAGUE. See FARMER-LABOR PARTY.

NORDAU, Max Simon, German physician and author: b. Budapest, Hungary, 29 July 1849; d. Paris, France, 22 Jan. 1923. He studied medicine in Paris and Budapest, and after receiving his M.D. degree in 1872 from the University of Budapest, he traveled through the principal countries of Europe. In 1878 he returned to Budapest and practiced his profession for two years, then went to Paris, studied medicine for two years more, and resumed active practice there. He had begun his literary activities at a very early age, and before taking up his medical studies was a contributor and dramatic critic for *Der Zwischenact*. Later he was correspondent and editorial writer for a number of other newspapers. His collected newspaper writings constituted the material for his earlier books, which include 'Pariser Studien

und Bilder' (1878); 'Seifenblasen' (1879); 'Von Kreml zur Alhambra' (1880); 'Paris unter der dritten Republik' (1881). This group is characterized by drastic arraignment of social and political conditions. 'Die Konventionelle Lügen der Kulturmenschheit' (1883); 'Conventional Lies of Society'; condemns what the author considered the fundamental falsity underlying some of the modern social, ethical and religious standards. In 1892 appeared his best known work, 'Entartung,' which was translated into English under the title, 'Degeneration.' It was a storm center of bitter criticism, maintaining, as it did, that the present civilization has caused human degeneracy, especially among the higher classes, a degeneracy reflected pronouncedly in the often depraved musical, artistic, and literary standards, and that the authors and creators of such works could be nothing more than degenerates, mental and moral. Among his other works are the following: 'Paradoxe' (1885; in English, 'Paradoxes'); 'Die Krankheit des Jahrhunderts' (1887; in English, 'The Malady of the Centuries'); 'Seelen Analysen' (1892); 'Die Drohnenschlacht' (1897); a novel, 'Gefühlskomödie' (1891; in English, 'A Comedy of Sentiment'); dramas, 'Der Krieg der Millionen' (1882); 'Das Recht zu lieben' (1893); 'Die Kugel' (1894), and 'Dr. Kuhn' (1898). These were followed by 'The Drones Must Die' (1899); 'Zeitgenössische Franzosen' (1901); 'Morganatic' (1904); 'On Art and Artists' (1907); 'Die Sinn der Geschichte,' and 'Zionistische Schriften' (1909); 'Mörchen' (1910), and 'Der Lebenssport' (1912). During the World War, on account of his Teutonic birth, he was taken into custody by the French, but was released on parole, whereupon he went to Madrid. He was a disciple of Lombrosa, a Jew; and was for many years a prominent leader in the Zionist movement. In this capacity he narrowly escaped assassination in 1903. Too proud and sensitive to become the recipient of any form of charity, he spent his declining days in straitened circumstances. At the time of his death he left unfinished a comprehensive work on philosophy.

NORTH CAROLINA, a South Atlantic State of the American Union and one of the Old South group, bounded north by Virginia, east by the Atlantic Ocean, south by the Atlantic Ocean and South Carolina, and west by Tennessee. It has an area of 52,426 square miles and in 1920 had a population of 2,559,123. The State is 27th in order of size and 14th in order of population. In 1920 the census reported 1,783,779 whites, 763,407 negroes, 11,824 Indians and 113 Asiatics. In the same year the foreign-born residents of the State numbered 7,099, of whom 967 were English and 703 German. The rural population in 1920 was 80.7 per cent of the total. The chief cities of the State with their populations are: Raleigh, the capital, 27,076; Charlotte, 46,338; Winston-Salem, 48,395; Wilmington, 33,372; Asheville, 28,504; Durham, 21,719 and Greensboro, 19,861. In 1920, 98 square miles of the State's area were occupied by Indian reservations, on which there dwelt a population of 8,268.

Religion.—The principal Christian denominations have an aggregate membership of 1,080,723; of these, 535,299 are Baptists, 338,979 are

Methodists, 69,898 are Presbyterians, 19,450 Lutherans, 18,545 Episcopalians, 6,109 members of the Reformed Church, and 4,989 Roman Catholics.

Education.—The direct legislative appropriation for schools in 1922 was \$850,000. The amount spent on the operation and maintenance of public schools was \$15,000,000. In 1921 there were 18,322 teachers in public schools and 860,328 pupils. School attendance is compulsory, and separate schools are provided for white and colored children. The State has 455 high schools, with 982 teachers and 30,868 pupils. There are nine normal schools for the training of elementary teachers. For higher education there are 15 university and college institutions of which the chief are the State University at Chapel Hill, the State Agricultural and Engineering College at West Raleigh and the State College for Women at Greensboro.

Finances.—At the beginning of the fiscal year 1921-22, there was a balance on hand of \$1,017,916.46. Receipts during the fiscal year 1921-22 amounted to \$12,914,522.75. Disbursements for the year ended 30 June 1922 amounted to \$6,552,870.79, leaving a balance at the beginning of the fiscal year 1922-23 of \$6,361,651.96. The bonded debt of the State in 1922 was \$27,025,600. The council of the corporation of foreign bondholders claims that the State has a defaulted debt amounting to \$12,600,000. The State claims that these bonds were fraudulently issued during the period of reconstruction following the Civil War. In 1921 the assessed value of real property was \$1,817,927,383; of personal property, \$761,148,217.

Charities and Corrections.—The State has a State Board of Charities and Public Welfare. The county is the unit of administration. The chief institutions with the number of inmates in each in 1922 were: State Hospital for the Insane, Morganton, 1,167; State Hospital for the Insane, Raleigh, 1,157; State Hospital for the Insane, Goldboro, 1,000; Jackson Training School for Boys, Concord, 360; Training School for Delinquent Girls, Samarcard, 200; State Penitentiary, Raleigh, 1,052; Confederate Soldiers' Home, Raleigh, 145; Confederate Women's Home, Fayetteville, 20; Caswell Training School for Mental Defectives, Kinston, 300, and the Orthopedic Hospital, Gastonia, 50.

Agriculture.—North Carolina is an agricultural State and its soil, climate and latitude all make for the development of a greater range of farm products than most States enjoy. Among the crops raised are wheat, corn, oats, potatoes, sweet potatoes, apples, peaches, nectarines, grapes, beans, peas, tobacco, peanuts, cotton, sugar-cane, strawberries, soya and velvet beans, and sugar-beets. Practically all trucking crops are raised in the eastern part of the State where the climate and the soil are favorable and where transportation facilities to the great markets are adequate. The chief crops with their acreage, yield and value for the year 1922 were: Corn, 2,526,000 acres, 50,520,000 bushels, \$44,963,000; winter wheat, 612,000 acres, 5,508,000 bushels, \$7,491,000; oats, 178,000 acres, 3,738,000 bushels, \$2,504,000; buckwheat, 5,000 acres, 100,000 bushels, \$97,000; rye, 40,000 acres, 320,000 bushels, \$384,000; tame hay, 800,000 acres, 1,-

120,000 tons, \$20,384,000; sorghum sirup, 30,000 acres, 2,940,000 gallons, \$2,352,000; potatoes, 48,000 acres, 4,512,000 bushels, \$4,557,000; sweet potatoes, 110,000 acres, 12,430,000 bushels, \$9,944,000; cotton, 1,626,000 acres, 852,000 bales, \$104,370,000; tobacco, 515,000 acres, 306,940,000 pounds, \$93,003,000; peanuts, 127,000 acres, 113,665,000 pounds, \$4,547,000; apples, 5,570,000 bushels; peaches, 1,008,000 bushels and pears, 110,000 bushels. North Carolina has cheap land, mild climate and long grazing seasons, and therefore has many of the conditions suitable for the raising of livestock. The dairy industry is well developed. There are 14 creameries in operation which manufacture over 1,300,000 pounds of butter yearly. There are 30 cheese factories in operation and about 5,000 children are attending the dairy schools under the direction of the State Department of Agriculture. Poultry raising has made great strides in recent years. Hogs are raised in practically all parts of the State. On 1 Jan. 1923 there were in the State 166,000 horses, valued at \$17,928,000; 260,000 mules, valued at \$33,280,000; 365,000 milk cows, valued at \$12,235,000; 274,000 other cattle, valued at \$4,685,000; 81,000 sheep, valued at \$454,000, and 1,271,000 swine, valued at \$16,904,000.

Mining and Minerals.—Minerals are found in great variety, but not in great quantities. The ores found in the State comprise iron, copper, silver and gold. Other economic minerals are corundum, mica, talc, monazite, zircon, garnet and kaolin, and about 200 others.

Manufacturing Industries.—The great sources of wealth of the State are cotton, tobacco and lumber. Census statistics show that in 1919 the value of manufactured products was \$943,807,949, an increase of over 249 per cent over the value of the State's manufactured products for 1914. One-fifth of the total value of all tobacco manufactured in the United States was manufactured in North Carolina. The State has 377 cotton mills, operating 5,255,320 spindles, 72,514 looms and 12,119 cards, using 218,883 horse power and consuming 305,360,316 pounds of raw material and employing 75,000 operatives. The estimated value of the yearly output of the cotton mills is \$237,980,155. There are three silk mills in operation and two cordage mills, nine woolen and 169 knitting mills, employing 18,360 workers, and having a combined output valued at \$26,691,774. The State has 13 furniture factories, the yearly output of which is valued at \$32,106,739, and employing 9,229 operatives. The 5,582 industrial establishments reporting to the census showed aggregate investments of \$699,802,985. There are 531 flour mills in the State.

Transportation.—The State is traversed by eight great railway systems and by an ever-growing number of smaller individual lines and branches. Steamboats ply the waters of the great sounds and rivers of the State. The total railway mileage in the State amounts to 4,958 miles of main lines and 1,273 miles of sidetracks, valued at about \$251,566,950. The State is giving more attention to the improvement of her highways than ever before in her history. Recent enactments of the General Assembly provided \$50,000,000 to be expended in highway improvement

within the next five years under the direction of the State Highway Commission. This Commission is composed of nine business men, representing nine construction districts into which the State is divided, and this Board, together with the Chairman, who is an all-time officer, have charge of the construction and maintenance of the roads on the State highway system, which embraces about 6,000 miles of highways connecting the county seats and principal towns of the State.

Fisheries.—The fishing industry of the State is one of the greatest of the South Atlantic group. Shad are the most important product, followed by oysters, mullets, weakfish, etc.

Recent Legislation.—The outstanding legislation of the 1921 session of the Legislature was the passage of a \$50,000,000 road bill for the construction of a State system of durable, dependable roads, connecting the principal towns and the county seats throughout the State. About 6,000 miles of roads are being constructed as a result. Of this, nearly 1,000 miles are hard surfaced, asphalt or concrete, and 5,000 miles are gravel surfaced. A gasoline tax of one cent a gallon yields nearly \$1,000,000 yearly, and the motor vehicle license tax nets around \$2,500,000, all of which goes into the fund for maintaining the roads and paying the interest on the \$50,000,000 bond issues which are being issued and sold as needed to construct the State highways. To enlarge the State's educational and charitable institutions during 1922, bond issues amounting to \$6,745,000 were issued, the State University receiving about \$1,500,000 of this amount. The public school fund was also increased. The Democratic majority in 1920 was 80,000, the largest in the history of the State, all of the State's ten representatives in Congress being elected from the Democratic Party.

Legal Holidays.—New Year's Day; 19 January (birthday of General R. E. Lee); 22 February (birthday of General Washington); 12 April (Resolutions Day); 10 May (Confederate Memorial Day); 20 May (Anniversary of the Mecklenberg Declaration of Independence); 4 July; First Monday in September; General Election Day; 11 November (Armistice Day); Thanksgiving Day; 25 December.

Government.—The Governor is the State executive. He is elected for a term of four years and receives a salary of \$6,500. The Legislature, known as the General Assembly, is composed of a Senate of 50 members and a House of Representatives of 120 members, elected for two years. The Legislature meets biennially on the Wednesday after the first Monday of January of odd years. Sessions are limited to 60 days. North Carolina sends two Senators and ten Representatives to the Federal Congress. For local administration the State is divided into 100 counties.

State Officials.—(1922). Governor, Cameron Morrison; Lieutenant-Governor, W. B. Cooper; Secretary of State, J. Bryan Grimes; Attorney-General, Jas. S. Manning; Auditor, Baxter Durham; Revenue Commissioner, A. D. Watts; Treasurer, B. R. Lacy, and Superintendent of Education, F. C. Brooks.

Judiciary.—Members of Supreme Court: Chief Justice, Walter Clark; Associate Justices,

Platt D. Walker, William A. Hoke, W. P. Stacy and W. J. Adams

NORTH CAROLINA COLLEGE FOR WOMEN, a State educational institution, founded in 1891 and located at Greensboro, N. C. In 1922-23 it had a faculty of 134 members, 1,272 students, property valued at \$2,500,000 and an income of \$540,000. Julius Isaac Foust, LL.D., is president.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING, an educational institution for men, founded in 1887 and located at Raleigh, N. C. In 1922-23 it had a faculty of 102 members, 1,225 students, property valued at \$2,500,000 and an income of \$400,000. W. C. Riddick, LL.D., is president.

NORTH CAROLINA, University of, a State educational institution for men (women, however, being admitted to graduate work and to upper classes), founded in 1793 and located at Chapel Hill, N. C. In 1922-23 it had a faculty of about 125 members, 1,870 students, property valued at \$4,000,000 and an income of \$480,000 (maintenance appropriation by State). Harry Woodburn Chase, LL.D., is president.

NORTHCLIFFE, Viscount, (Alfred Charles William Harmsworth), British publisher: b. Chapelizod, near Dublin, Ireland, 15 July 1865; d. London, England, 14 Aug. 1922. He was the eldest of 14 children, of whom 10 survived him, and to his mother, a woman of decisive character, he was, to the end, devoted, never omitting to send her a daily message, whether by letter or telegram. Her maiden name was Geraldine Maffett and her father was a land agent in Dublin, of Scottish ancestry.

The father, Alfred Harmsworth, was of Hampshire (England) stock. He was a barrister of limited means and uncertain health and his large family suffered privations. The eldest son was sent to Stamford Grammar School where he was not too happy and later to a school in West Hampstead. He played cricket and football and was an eager rather than a deep student.

At school he started a magazine and his career as journalist opened more seriously when he began free lance work for various journals, at a very modest remuneration. His contributions were not always accepted but by the time he was 21 years old he had saved \$5,000 and had a partnership offered him by a publishing firm at Coventry.

In 1887 he and his second brother, the present Lord Rothermere, started a weekly paper called *Answers*. It was a copy of *Titbits* with which Sir George Newnes had made a hit and the title was suggested by *Notes and Queries* which little journal Harmsworth admired and afterward bought. *Answers* was only a moderate success until Harmsworth offered certain speculative inducements to the readers which boosted the circulation sky-high. From this time forward, the young man's finances never were in doubt. He published anything that would pay, however trivial, sentimental, religious or sensational its character. His profits were enormous, for that line of business.

In 1894 he bought the London *Evening News*

which was losing \$1,500,000 a year. Within 12 months that loss had been turned into a profit of \$70,000 and so encouraged, Harmsworth, in 1896, started the *Daily Mail* which revolutionized morning journalism in Britain. News, previously expanded to a column, was compressed into a paragraph. The serious and discursive editorial was cut to a kind of exclamation mark. Immense sums were spent on getting news of a short and snappy style, and the price of the paper was (½d) instead of the penny charged by older journals. The *Daily Mail* was an immediate success. Its big chance came with the South African War when its circulation rose to 600,000, then considered a fabulous figure. To-day, it is selling nearly, if not quite three times that number. Editions are published in London, Paris and Manchester.

Harmsworth was now famous. He acquired large wood pulp interests in Newfoundland. He traveled in India, Europe and America. He financed the Jackson Harmsworth Arctic Expedition, and in 1895 he stood as Conservative candidate for Portsmouth, but unsuccessfully. He was created successively, knight, baronet and, in 1905, baron; he adopted the title, Northcliffe; he was among the first in Britain to drive a motorcar and he was the patron of aeronautics.

At this stage of his career, Northcliffe was one of a trio—the others being Sir George Newnes and Sir C. A. Pearson—who exploited a certain phase of British intellect. In 1870, public elementary education had been authorized by law. At 12 to 14 years of age, successive generations of boys and girls left school, with minds still unformed and yet with the habit of reading. They had little money and even less critical judgment. As Lord Salisbury, the Prime Minister said: "The *Daily Mail* is written by office boys, for office boys"—a sardonic remark which, at the time, was not without truth. A minority in Britain was learned, cultured, efficient and powerful. Harmsworth and his competitors swept aside this minority and like John Wesley, claimed the world for parish.

But, in 1908, Northcliffe dared his greatest gamble. He acquired control of *The Times*. The office boy, publishing for office boys, the man who had made his millions out of chit-chat-snap-comic-cut-wildwest-home-fashions fare for the people was enthroned in Printing House Square, the Jove of journalists, managing the heritage of the Walter family and dictating the bolts of "the thunderer." It was finance that forced *The Times* into his hands nor was he the only bidder. Pearson nearly forestalled him. The effect of his conquest was curious. On the one hand, he improved the mechanical production of the newspaper, he brushed up its foreign correspondence, humanized its lighter features and co-ordinated "the make up," all of which helped to quadruple the circulation. On the other hand, the mystery that had surrounded *The Times* was for ever dispelled. It might be more widely read. But it could no longer make and unmake governments. The very reduction of its price from three pence to one penny before the war—was abdication. *The Times* became thereby no more than the equal in au-

thority with Lord Burnham's *Daily Telegraph* or the *Morning Post*. The great tradition had been popularised out of recognition.

Lord Northcliffe, as chief proprietor of *The Times*, entered on the final phase of his career. His ambition was immense, allowing his mind no rest, he became subject to strange idiosyncracies which, at an early period, caused his friends anxiety. In face and physique—especially profile—he bore a certain resemblance to Napoleon of whom he believed himself to be the re-incarnation. He cultivated the lock of hair which fell over Napoleon's forehead. He saw himself as emperor with field marshals around him. His title—Northcliffe—was so chosen as to enable him to sign himself with the Napoleonic "N." Constantly he would talk of Napoleon and even suggest to some member of his staff a new biography of the idol.

To determine the fate of the British empire and all who ruled it became his task in life. And with the Great War, he realized his supreme opportunity. For years, he had been among the many who had believed that a conflict with Germany was inevitable. He had so attacked Germany as to do his part in securing the fulfilment of these forebodings. A whole hearted imperialist, he was the very apostle of preparedness. In 1914 he secured for *The Times* the semiofficial representation of the Red Cross interests. His onslaughts against Lord Haldane, the fairness of which has been challenged, were a factor in securing Lord Kitchener's appointment as Secretary of War. In a few weeks, Northcliffe was as dissatisfied with Kitchener and especially with Kitchener's censorship as he had been suspicious of Haldane, and in the spring of 1915, it was *The Times* that published the warning as to high explosive shells which French had communicated to Colonel Repington who was then that journal's military correspondent.

The first or Asquith Coalition was then formed, with Lloyd George as Minister of Munitions. But Northcliffe, too powerful to be wholly censored, a privileged guest in court and in camp and in chancelleries, was still restless. And his agitation for a small war cabinet, with dictatorial powers led in December 1916, to Asquith's fall, and to Lloyd George's rise to supreme office. It was Northcliffe's Austerlitz.

In Lloyd George, he met his match. The Prime Minister recognized, frankly, that even Parliament had become subject to the press. But he also realized that Northcliffe, after all, controlled only a minority of newspapers circulated. He mobilized Northcliffe's rivals against Northcliffe and defied the Napoleon of Fleet Street. In 1917, Northcliffe was offered the position of British Ambassador at Washington which he declined and he also refused to join the War Cabinet. He did, however, lead the British War Mission to the United States, and in 1918 he became Director of Propaganda in enemy countries. But he carefully abstained from any post which would bring him under the kind of criticism that he liked to level at others nor did he make his charges in the House of Lords, where he had a seat and could have been answered, face to face. Lloyd George had the

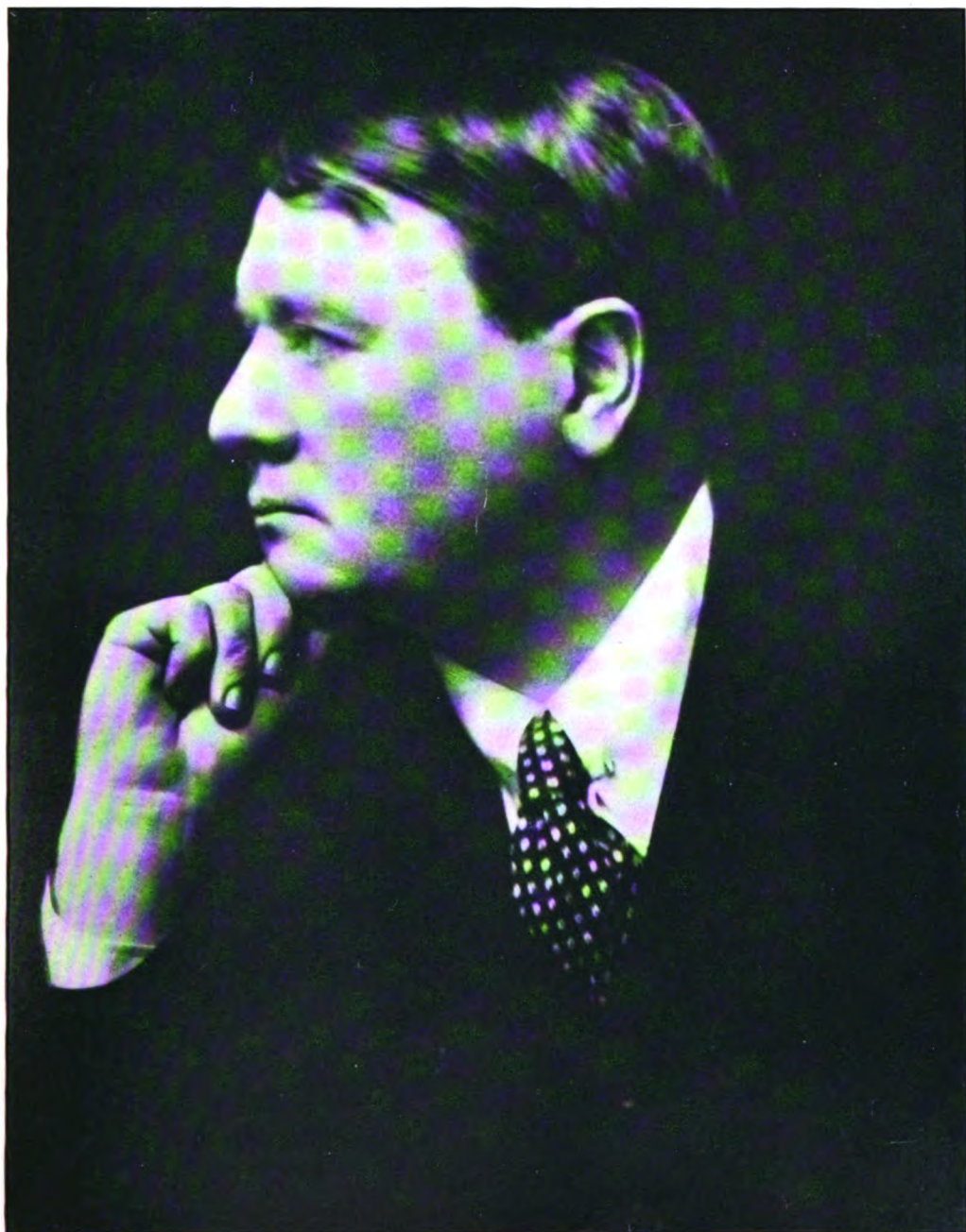
advantage of being ready at any time to confront his enemies in Parliamentary debate.

Northcliffe was finally checkmated when Lloyd George won "the coupon election" of 1918 by a majority which made him master of Britain's fate at the Paris Conference. That Northcliffe wished to be a delegate was an open secret. He was passed over. And, indeed, the shades were already gathering around him. In 1919, an adenoma was removed from his throat. The operation was successful but it left Northcliffe excitable and feverish. His papers exploited the public indignation against waste after the war. Lloyd George was furiously denounced without being destroyed. In 1921, after a particularly severe trouncing from the Prime Minister, Northcliffe suddenly decided upon a tour round the world. On landing in New York, he or his colleagues committed the unpardonable offence, as it is regarded in Britain, of announcing in an interview that King George had warned Lloyd George personally against continuing bloodshed in Ireland. Lloyd George's rejoinder was a crushing blow to Northcliffe's prestige. He appeared in the House of Commons and read an explicit repudiation from the King himself and Northcliffe was refused the usual hospitalities of the British Embassy at Washington. His tour continued and everywhere he was received with marks of distinction. He warned Australians against keeping their country underpopulated and so inviting the attentions of Japan. But, on his return, his editorial staffs were not always convinced of the wisdom of the pronouncements for which he desired publicity. In one case, an intimate colleague, had to protect his professional standing by an appeal to the law.

The fact was that Northcliffe's over-strained mind had failed. When he died, a service for him was held in Westminster Abbey and he was buried at Marylebone. His wife, the daughter of Robert Milner, a West Indian merchant, survived him.

Northcliffe, though erratic and addicted to despotism, was beloved. He had no child and his heir is his nephew, Esmond Cecil Harmsworth, eldest surviving son of his brother, Lord Rothermere. When his uncle died, he was Unionist member for Thanet. His brother, Cecil Bisshop Harmsworth was for some years Lloyd George's under-Secretary for Foreign Affairs. Hildebrand Aubrey Harmsworth and Sir Robert Leicester Harmsworth, Bt., two other brothers, shared Northcliffe's achievements in journalism.

Probably the historian will correct the common impression that Northcliffe was omnipotent over statesmen. It was his business as a newspaper man to magnify his own importance. As a matter of record, Britain seldom followed his advice. He wanted tariffs and the country remained free trade. He denounced the Lloyd George budget and defended the House of Lords. The country turned down the House of Lords and accepted the budget. He opposed Home Rule until some form of Home Rule became inevitable and again events belied his judgment. His final enthusiasm was for French policy at Genoa and Lord Rothermere is following in his footsteps by vigorously supporting Poincaré and the Ruhr occupation. Yet here again, Bonar Law, with the support of all parties, has dis-



Courtesy of London Times

THE LATE VISCOUNT NORTHCLIFFE



1900

associated Great Britain from France and the Harmsworth counsels. What makes piquant reading over breakfast or in the train, is not of necessity the material on which the nation has based its policy. The rise of the Labor Party, which Northcliffe had hated, is a symptom that he represented an era of imperfect education which has already passed away. Indeed, he appreciated this and in his later years, developed the more responsible side of the newspaper business, issuing some publications of the highest intellectual value. Northcliffe left a fortune of \$25,000,000 of which \$10,000,000 must be paid away in British Death Duties.

PHILIP WHITWELL WILSON.

NORTH DAKOTA, a west north-central State, bounded on the north by Canada, east by Minnesota, south by South Dakota, and west by Montana. It has an area of 70,837 square miles and in 1920 had a population of 646,872. The State is 16th in order of size and 36th in order of population. Of the population in 1920, 639,954 were whites, 6,254 Indians, 467 negroes, and 197 Asiatics. The foreign-born residents the same year numbered 131,503, and included 38,190 Norwegians, 29,617 Russians, 15,550 Canadians, and 11,960 Germans. The rural population in 1920 was 86.4 per cent of the total. The chief cities are: Bismarck, the capital, population, 6,951; Fargo, 21,961, and Grand Forks, 13,450.

Religion.—The principal Christian denominations have an aggregate membership of 225,877, of whom 95,859 are Roman Catholics, 72,026 Lutherans, 13,479 Methodists, 9,295 Presbyterians, 6,268 Baptists, 8,913 Congregationalists, 2,455 Episcopalians and 1,435 members of the Reformed Church.

Education.—Primary education is free and compulsory for all children between the ages of seven and 15. There are in the State 4,532 primary schools, with 9,308 teachers and 173,976 pupils; 690 high schools, with 3,457 teachers and 90,195 pupils, and five normal schools, with 1,800 students. For higher education there are the State University, the State Agricultural College and Fargo College.

Finances.—On 1 July 1921 the State had on hand a balance of \$3,054,390.17. Receipts during the fiscal year 1921-22 amounted to \$14,762,853.87. Disbursements for the same period totaled \$15,411,760.94, leaving a balance on hand on 1 July 1922 amounting to \$2,405,483.10. The bonded debt of the State on the latter date was \$7,048,200. The assessed value of all property, real and personal, in 1922 was \$1,300,000,000.

Agriculture.—Agriculture is easily the chief source of wealth. In 1920 the value of all crops was \$301,782,000, as against \$57,374,000 for manufactured products. Even the latter consisted mainly of flour and other by-products of agriculture. The State produces every cereal and crop grown in the north temperate zone. Much of the grain and nearly all forage crops are fed locally to livestock. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 680,000 acres, 18,700,000 bushels, \$9,350,000; spring wheat, 8,740,000 acres, 123,234,000 bushels, \$110,911,000; barley, 1,008,000 acres, 25,704,000 bushels, \$10,025,000; oats, 2,388,000 acres, 78,804,000 bushels, \$20,-

489,000; rye, 1,581,000 acres, 24,506,000 bushels, \$14,704,000; tame hay, 1,028,000 acres, 1,655,000 tons, \$12,412,000; potatoes, 198,000 acres, 17,820,000 bushels, \$5,524,000. On 1 Jan. 1923 there were in the State 797,000 horses, valued at \$44,632,000; 8,000 mules, valued at \$552,000; 503,000 milk cows, valued at \$22,132,000; 814,000 other cattle, valued at \$17,420,000; 240,000 sheep, valued at \$1,752,000, and 478,000 swine, valued at \$6,453,000. The census of 1920 reported 77,690 farms having a total area of 36,214,751 acres, of which 24,563,178 was improved land. The assessed valuation of all farm property in 1920 was \$1,759,742,995.

Mining and Manufacturing.—There are considerable coal lands in the western part of the State from which a brown, low grade coal is produced for domestic consumption. Cement is another important mineral product. Flour and grist milling, dairying and the creamery industry are the principal manufacturing activities. In recent years the State has striven to stabilize agriculture by dairying development. The 1921 return from all dairy products was estimated at \$30,000,000 by the State Agricultural Station at Brookings. About 20,000,000 pounds of cream is sold to creameries yearly.

Legal Holidays.—1 January; 12 February; 22 February; 30 May; 4 July; first Monday in September; 12 October; Thanksgiving Day; 25 December, and every day on which an election is held throughout the State and every day appointed by the President of the United States or by the Governor of the State for a public fast, thanksgiving or holiday.

Charities and Corrections.—The number of inmates in the chief charitable and corrective institutions of the State on 1 July 1922 was as follows: State Penitentiary, Bismarck, 228; Tuberculosis Sanitarium, Dunseith, 102; Feeble-minded School, Grafton, 323; Deaf School, Devils Lake, 117; Insane Asylum, Jamestown, 1,256; State Training School, Mandan, 130; and Blind School, Bathgate, 30.

Transportation.—The State has a steam railroad mileage of 6,406.87 miles and an electric railway mileage of 27 miles.

Government.—The State executive is a Governor, who is elected for two years and receives a salary of \$5,000. The Legislative Assembly comprises a senate of 49 members, elected for four years and a lower house of 113 representatives, elected for two years. The Legislature meets biennially in January. The State sends two Senators and three Representatives to the Federal Congress. For local administration the State is divided into 53 counties.

State Officials.—(1922). Governor, R. A. Nestos; lieutenant-governor, Howard R. Wood; secretary of state, Thomas Hall; attorney-general, Sveinbjorn Johnson; auditor, D. C. Poindexter; treasurer, John Steen, and superintendent of public instruction, Minnie J. Nielson. The State officials entering upon their duties in January 1923 were: Governor, R. A. Nestos; lieutenant-governor, J. A. Hyland; secretary of state, Thomas Hall; attorney-general, George Schafer; auditor, D. C. Poindexter; treasurer, John Steen, and superintendent of education, Minnie J. Nielson.

Judiciary.—Members of Supreme Court

(1922): Luther E. Birdzell, J. E. Robinson, R. H. Grace, Harry A. Bronson, A. M. Christianson. The members of the Supreme Court entering upon their duties on 1 Jan. 1923 were: H. A. Bronson, A. M. Christianson, L. E. Birdzell, Sveinbjorn Johnson and W. L. Nuessle.

NORTH DAKOTA, University of, a State co-educational institution, founded in 1883 and located at University Station, Grand Forks, N. D. In 1922-23 it had a faculty of 109 members, 1,449 students, not including students of the 1922 summer session nor extension students; property valued at \$1,259,500, and an income of \$552,300, including \$193,049 for buildings and improvements. Thomas F. Kane, Ph.D., LL.D., is president.

NORTHERN TERRITORY. See AUSTRALIA.

NORTHLAND COLLEGE, a co-educational institution, affiliated with the Congregational Church but non-sectarian, founded in 1892 and located at Ashland, Wis. In 1922-23 it had a faculty of 17 members, 175 students, property valued at \$232,958.99 and an income of about \$45,000. Joseph D. Brownell, D.D., is president.

NORTHWESTERN COLLEGE, a co-educational institution of the Evangelical Association, founded in 1861 and located at Naperville, Ill. In 1922-23 it had a faculty of 42 members, 574 students, property valued at \$626,789.73 and an income of \$167,782.45. Edward E. Rall, Ph.D., is president.

NORTHWESTERN COLLEGE, a Lutheran co-educational institution, founded in 1865 and located at Watertown, Wis. In 1922-23 it had a faculty of 17 members, 154 students, property valued at \$260,000, and an income of \$62,000. E. E. Kowalke, A.B., is president.

NORTHWESTERN UNIVERSITY, a co-educational institution, founded in 1851 and located at Evanston and Chicago, Ill. In 1922-23 it had a faculty of 575 members, 8,500 students, including 300 part time students and those taking summer courses, property valued at \$13,000,000, and an income of approximately \$2,000,000. Walter Dill Scott, Ph.D., LL.D., is president.

NORTH-WEST TERRITORIES, a part of the Dominion of Canada, lying between the Yukon and the Prairie Provinces and north of British Columbia. Area, 1,242,224 square miles; Population in 1911, 18,481. The Territories are divided into three Districts — Mackenzie, Keewatin and Franklin. The government is by a Commissioner and five councillors. Commissioner in 1922: William Wallace Corey. See CANADA.

NORWAY, a kingdom of northwest Europe occupying the northern and western parts of the Scandinavian peninsula. The kingdom has an area of 124,965 square miles and a population of 2,646,306 (census of 31 Dec. 1920). The census showed a rural population of 1,861,424 and an urban population of 784,882. In 1920, there were 70,691 births, exclusive of the stillborn, and including 5,253 illegitimates. In the same year, 5,581 persons emigrated from Norway, of whom 5,216 came to the United States. The

1920 census showed one city of over 100,000 inhabitants, five above 20,000, 18 above 10,000, and 26 above 5,000. The chief cities, with their populations in 1920, are the following: Kristiania, the capital, 258,341; Bergen, 91,081; Trondheim, 54,520; Stavanger, 43,883; Drammen, 26,174; Haugesund, 16,563; Alesund, 16,347; Kristiansand, 16,543; Skien, 16,503; Frederikstad, 15,579; Kristiansund, 15,183; Tonsberg, 12,588; Larvik, 11,391; Frederikshald, 11,218; Sarpsborg, 10,881; Horten, 10,413; and Arendal, 10,358.

Education.—Primary education is free and compulsory. The school age in cities is from six and one-half years and in the country districts from seven years; both terminating at 14 years. The last school census reported 6,000 elementary schools with 282,117 pupils in the rural districts and 3,379 classes in the urban areas with 96,784 pupils. There are 113 secondary schools with 20,714 pupils and 10 private schools. There are 10 normal schools with 1,263 students; four of these schools are private. For higher education there is the University of Kristiania, attended by 1,500 students. There are also technical high schools and one agricultural high school and many special schools; 10 schools for abnormal children and nine reformatory schools.

Religion.—The national church is the Evangelical Lutheran and is the only denomination endowed by the state. Its upper clergy are nominated by the sovereign. There exists partial toleration of other denominations, the exception being members of the Society of Jesus (Jesuits). The last religious census showed 62,553 dissenters from the state religion. These consisted of 2,046 Roman Catholics, 7,659 Baptists, 10,986 Methodists, 715 Mormons and 145 Quakers.

Agriculture.—Most of Norway is so barren and rugged that it cannot support a dense population. It may well be described as a seaboard nation, for all its larger cities are seaports and it has no densely populated interior districts. The sea is the great controlling factor in the development of Norwegian industrial life, which largely determines the location of population. The fiords of the southern half of the country facilitate direct trade connections with the commercial nations of Europe and America. In this section the climate is congenial, and lumbering, agriculture and manufacturing are favored by the soil, the topography, and the waterpower resources. This part of the country contains more than two-thirds of the population and all of the large cities. Norway is a rugged country. The mountains are not high, but their slopes are steep, especially oceanward, so the relief is bold and picturesque. The larger part of the country is a plateau severely eroded by glaciation and by streams. These combined with the location in the far north, cause practically three-fourths of the area to be barren — unproductive of any vegetation of value. Only 3 per cent of the total area is now classed as cultivated land. The arable soil is generally in small bodies, in narrow strips along streams, lakes and fiords. About 21 per cent of the area is under forest. The number of farms is given as 261,484, of which only 265 had an area over 125 acres and 15,070 are from 25 to 125 acres. According to the report of the director of the Department of Agriculture of the Norwegian government

the state of the crops in Norway during 1921 was as shown in the following table:

Crops	Average crops	Computed crop in 1921
	Tons	Tons
Hay.....	1,812,279	1,834,928
Straw.....	823,468	673,602
Total.....	2,635,747	2,508,602
Wheat.....	30,028	26,445
Rye.....	26,728	26,484
Barley.....	123,482	93,167
Oats.....	243,351	188,152
Mange corn.....	22,198	18,254
Peas.....	5,803	4,008
Total.....	451,585	356,570
Potatoes.....	928,889	707,489
Turnips.....	410,886	348,367

Live stock reports show 1,049,642 head of cattle, 1,207,923 sheep, 221,062 horses, 203,099 goats, 214,305 swine. The forest products are one of the chief sources of the national wealth. Of the total forest area (27,434 square miles) about 75 per cent is covered with pine trees. The value of unwrought timber exported in 1920 was 109,846,200 kroner and of wrought timber 226,669,000 kroner.

Fisheries.—A third of the total export values in normal years is represented by the products of

Items	1920	1921
Herring:		
Salted, spring, barrels.....	1,222,000	626,000
Salted, fat, barrels.....	193,000	168,000
Salted, large, barrels.....	850,000	394,000
Bristling, barrels.....	1,300	8,000
Norwegian-caught, Icelandic, barrels.....	92,000	55,000
Fresh, cases.....	614,000	523,000
Smoked, kilos.....	230,000	181,000
Klipfish, kilos.....	37,700,000	27,500,000
Roundfish, kilos.....	9,500,000	14,200,000
Split codfish, kilos.....	500,000	1,300,000
Codfish, kilos.....	3,600,000	3,100,000
Haddock, kilos.....	1,300,000	800,000
Other dry fish, kilos.....	850,000	874,000
Cod-liver oil and other fish oils:		
Steamed, medicinal, barrels.....	42,736	58,013
Raw, medicinal, barrels.....	4,619	6,241
Blank, barrels.....	4,375	4,873
Brown cod-liver, barrels.....	3,600	8,828
Greenland shark, barrels.....	377	9,509
Whale, barrels.....	1,764	1,042
Hardened whale, barrels.....	21,646	4,526
Bottle-nose, barrels.....	3,828	31,345
Herring, barrels.....	1,104	827
Roe, cod, barrels.....	56,867	56,252
Salted mackerel, barrels.....	35,100	39,154
Fresh mackerel, kilos.....	27,000	21,000
Fresh salmon, kilos.....	244,000	289,000
Live eels, kilos.....	261,000	407,000
Other fresh fish, kilos.....	91,000	123,000
Lobster, number.....	1,165,000	2,278,000
Salted in fishing boats, kilos.....	375,000	410,000
Salted in barrels, barrels.....	3,400,000	8,600,000
Herring meal, kilos.....	9,143	5,286
Fish guano, kilos.....	26,800,000	12,300,000
Sealskins.....	8,100,000	5,600,000
Canned fish, kilos.....	1,000,000	700,000
	20,100,000	15,500,000

the fisheries. The total value of this industry in 1919 was 135,890,096 kroner. The chief fisheries

are for cod, herring, mackerel, salmon and sea trout and lobsters. Minor branches of this industry are the fisheries for whale, walrus, seal, and sharks, which produce products of a normal yearly average of 40,500,000 kroner. Whale oil production in 1920 amounted to 37,275 metric tons. According to *Harmand* (a Norwegian publication), the fisheries of Norway during 1921 had difficulties to contend with. As anticipated, the results of the winter herring fisheries were very poor. The amount of fish caught was less than in 1920 and the prices exceptionally low. All of the fisheries were, as a rule, operated at a loss during the year. Computations based on prevailing prices of fish show that the approximate value of Norwegian fish caught in 1921 was about 55,000,000 crowns, as compared with 80,000,000 crowns in 1920 and 133,000,000 crowns in 1919. The preceding table shows the quantity of fish and fish products exported from Norway in 1920 and 1921.

Minerals and Mining.—Norway is not rich in mineral wealth. While ores of considerable variety are found, few of them are of high grade or so located as to be easily accessible for mining. Iron ore is found in both the northern and southern parts of the country, but its percentage of iron is low and the production is therefore difficult in competition with richer ores. Pyrites containing both iron and copper occur in large quantities in a number of places. There is also a shortage of coal for smelting. The mineral products include silver, copper, pyrites, iron, feldspar, nickel and sulphur. The value of all mineral products in 1918 was 37,131,000 kroner; of furnace products, 28,369,000 kroner. In the years following the war these values decreased greatly but the production to a much less extent. There are in the country 127 mining establishments with 8,000 hands and 14 smelters with 1,100 hands.

Manufactures.—The enormous amount of waterpower in Norway has given added impetus to its manufacturing industries so long hampered by lack of coal. Development of hydroelectricity has reached a total of 1,215,000 horsepower, but a great expansion is contemplated in the near future. The chief use of this power so far developed is for the production of pulp and paper and of electrochemical products. Of this latter the chief products are ammonium nitrate, sodium nitrate, calcium carbide, and ferrosilicon. The manufacturing establishments in 1920 numbered 8,069, with 158,259 operatives. Of these factories, 2,348 were engaged in the making of articles of wood, bone, horn, etc., 1,830 in food products, 1,295 in machinery and metal work, 510 in clothing, 390 in quarries and ceramics, 347 in paints, oils, chemicals and soaps, 340 in printing, 306 in the electrical industry, 251 in textiles, 213 in paper, 127 in leather and rubber, and 57 in mining.

Commerce.—The Central Bureau of Statistics stated the values of the foreign commerce of Norway in 1921 based on prices in 1913. The values thus obtained give a general impression of the change which has taken place in trade in recent years. According to these figures Norwegian imports in 1921 were valued at 462,050,000 crowns (1 crown=\$0.2680 at normal exchange), as compared with 765,280,000 crowns in 1920 and 524,860,000 crowns in 1913. The figures

also show a decrease in the value of exports, which declined from 367,030,000 crowns in 1913 to 330,900,000 crowns in 1920, and 234,470,000 crowns in 1921. If 100 represents the value of imports and exports in 1913, then the 1921 exports were equal to 64 and the 1920 exports to 90, while 1921 imports were equal to 88 and 1920 imports to 146. The volume of imports in 1921 was 12 per cent lower and exports 36 per cent lower than in 1913. In 1921 there was a decrease of 30 per cent in the volume of exports from Norway, as compared with 1920. Exports in 1922 had an estimated value of 730,000,000 crowns.

Shipping.—The arrivals at Norwegian ports in 1921 aggregated 2,232,426 tons as compared with 2,850,892 tons in 1920; clearances aggregated 3,477,187 tons as compared with 3,397,618 tons in 1920.

On 30 June 1922 the total tonnage of Norwegian shipping, according to *Lloyds' Register*, was 2,237,000 tons, as compared with 2,285,000 tons on 30 June 1921, and 1,923,000 tons on 30 June 1914. On 13 Oct. 1922 it was announced that The Hague Arbitration Tribunal had awarded Norway approximately \$12,000,000 in the case between the United States and Norway involving claims growing out of the requisitioning by the United States during the war of Norwegian vessels. The budget for 1923 appropriated 15,000,000 kroner for assistance to Norwegian shipping. On 26 Feb. 1923 the United States paid Norway \$12,239,852, the amount of the award by the tribunal of arbitration which passed on the claims growing out of the seizure during the World War of Norwegian ships.

Finance.—The budget for the fiscal year 1921-22 showed ordinary and extraordinary revenues of 717,077,800 kroner with expenditures of a similar sum. The ordinary revenue is derived from the income tax, customs, excise, succession dues, stamps, luxuries taxes, posts and telegraphs, and railways. The extraordinary revenues are derived from excess profits, taxes, tonnage tax, and loans. The extraordinary expenditures are for the construction of railways, telegraph and telephone lines, water-power developments, and other public works. The public debt at the beginning of the year 1922 amounted to 1,220,555,000 kroner.

Railways.—The total length of railways in Norway is 2,072 miles, of which all is state-owned except 271 miles. Coal furnishes the motive power for the main lines and mostly for the branch lines, although on account of the coal shortage of the last two years wood was used to some extent. Very little electrification has so far been accomplished, but plans are under way for extensive expansion in that direction. The main lines centre in the capital and radiate in different directions.

Roads.—There are 7,828 miles of improved roads and 12,926 miles of secondary roads.

Defense.—The army is in effect a national militia with universal service beginning at the age of 18 and continuing to the age of 55. The peace strength of the land forces is 138,500 men capable of expansion upon mobilization to 282,000 men. The navy personnel has 190 officers and 1,000 men on the active lists. The vessels are four old cruisers, two gunboats,

four destroyers, 29 torpedo boats, four submarines and ten minelayers.

Government.—The legislative power is vested in the Storting, which meets yearly and is composed of 150 members elected by universal suffrage for three year terms. The executive power is vested in the sovereign who may exercise his veto twice. The Storting of 1922 had 57 Conservatives and Moderates; 37 Liberals; 29 Communists; 17 Agricultural Party; 8 Socialists and 2 Democrats. The reigning sovereign in 1922 was His Majesty Haakon VII; the Premier and Minister of Finance in the same period was Otto Albert Blehr.

History.—The Storting opened on 26 January and received from the Government bills for a state monopoly of the importations of cereals, flour, brandies and wines; for compulsory arbitration of labor conflicts, and for the reform of the consular service. It was estimated that the Government's expenditures for the year be reduced by 76,000,000 kroner from that of the previous year. On 18 January it was announced that the Norwegian government had recognized the Obregon administration in Mexico. A Court of Arbitration was set up to decide the question of Norwegian shipowners' claims against the United States Shipping Board for vessels requisitioned during the World War, of which Prof. Max Huber of Switzerland was made President. On 18 March the Odelsting, or Lower House, passed the bill establishing compulsory arbitration in all labor disputes. The passage of this act marked the final effort to rid industry of the menace of strikes. The great advantage claimed for it is that it will prevent cessation of work and its consequent unemployment during a labor dispute. Power now rests in the Government, whenever the public interest is endangered, to decide that an arbitration court shall pass on the merits of the dispute and does not permit of a stoppage of work during settlement. Five members constitute the arbitration court, of these one is appointed by the labor element involved, one by the employers, and three by the Government. Judgment is passed by a simple majority and is binding for a period not exceeding two years but may be extended by mutual consent of the parties. Illegal stoppage of work is punished by a fine. The new legislation is tentative.

The Government is finding great difficulty in enforcing the liquor law. Smuggling is thriving along the coast and many voices are calling for the repeal of the law, since it is claimed that Prohibition is a "total fiasco." Friction with Moscow was caused by the seizure of Norwegian sealers, whalers and fishermen in the White Sea. The Norwegian government protested to the Soviet government on 6 June against the seizures of vessels, cargoes and crews and sent a war vessel to those waters to protect her subjects. The Foreign Minister, Dr. Raasted resigned early in June and was succeeded by Dr. Mowinckel. The former had been severely criticised by the Conservatives for his commercial treaty with Soviet Russia and for the unsuccessful negotiations with Spain relative to the importation of alcoholic liquors. However, he was supported by the Prohibition

elements. On 19 June the Government submitted to the Storting a bill authorizing the governmental measures necessary to prevent the sale of the Spitzbergen mines to foreigners. The Socialists took umbrage at the conditions imposed on labor in these mines but were reassured that as soon as the question of the sovereignty over the Spitzbergen Islands was definitely settled the Norwegian labor laws would be enforced there. On 7 July it was announced that the taxes of foreigners owning property and shares in Norway would be reduced by half. At the same time the Storting authorized the Treasury to cancel collection for 1922-23 of ordinary government taxes on property and income which had been demanded of shareholders living abroad. On 8 August the Government was authorized to conclude a commercial agreement with Spain. It was proposed to sanction the annual importation of 500,000 litres of liquors and strong wines, these to be used chiefly for medicinal and technical purposes. The operation of the Treaty with Russia was fraught with many difficulties. It was charged that Russia was beginning to ship from Archangel stocks of wood belonging to the Norwegian company known as the Russian Forest Interests. The company filed formal notice that it would claim these cargoes upon their arrival in England. On 4 August the Foreign Office stated that the safe of the former Norwegian consulate in Moscow had been blown open and rifled of its contents. When the Norwegian delegation in Moscow protested the Soviet Government replied that consular property did not have extraterritorial privileges as the vault was unsealed and contained documents belonging to Russians. This was denied. The loss was estimated at 1,000,000 kroner. On 29 August the Permanent Court of Arbitration at The Hague closed its session on the shipping case between the Kingdom of Norway and the United States after deliberations lasting two months. The chief points discussed were whether the United States actually did requisition the Norwegian ship-building contracts and, if so, what was taken when they were requisitioned, the date of the requisition (3 Aug. or 6 Oct. 1917), and the value of the things so requisitioned. On 13 October the award of the Court was handed down. The verdict was in favor of Norway. Claims presented by Norway amounted to \$13,000,000 plus interest from August 1917 and the Court awarded approximately \$12,000,000. The United States had recognized its liability for about \$2,500,000. The United States representative when the award was announced, gave formal notice that the United States reserved the right to move for a new trial on the ground of essential error. In September the Queen of Holland and her Consort paid an official visit to Norway where they received an enthusiastic welcome. In the autumn friction developed with Denmark over Norwegian rights in Greenland and the question was still unsettled at the close of the year. A system of industrial shop councils in all public and private plants and businesses employing 50 persons or more was established by the Government on 26 November. The Norwegian budget for the year ended 30 June 1922 appropriated 25,000,000 kroner for govern-

ment assistance to shipping. The appropriation is managed by the Ministry of Commerce. Aid is granted only to vessels conforming to Government requirements as to seaworthiness, officers and crews, etc. Only 700,000 kroner of the appropriation are for steamers in foreign trade. The object of the subsidy is to facilitate trade in food supplies and their transportation to remote districts and to meet special emergencies and conditions. On 1 July the Norwegian merchant fleet totaled 2,237,000 tons but the number of ships was about 15 per cent less than that of the prewar fleet. At the close of April the number of the unemployed registered was 43,000. This total was reduced to 21,000 by 1 August. No strikes are possible in Norway, all disputes being settled by compulsory arbitration under the law for this purpose. Plans were presented to the Government for the extraction of oil from Spitzbergen coal, which is especially rich in oil content. It was proposed to establish a plant in northern Norway to produce about 3,000 tons of crude oil the first year from 20,000 tons of coal, increasing this amount to 18,000 tons of oil later or enough to satisfy the domestic demand for motor oil.

NORWEGIAN LUTHER COLLEGE, a Lutheran educational institution for men, opened September 1861 and located at Decorah, Iowa. In 1922-23 it had a faculty of 22 members, 302 students, property valued at \$922,608.15 and an income of \$60,919.41 (1 May, to 31 December). Oscar L. Olson, Ph.D., was acting president, 1 March 1923.

NORWICH UNIVERSITY, a non-sectarian military college, founded in 1819 and located at Northfield, Vt. In 1922-23 it had a faculty of 26 members, 276 students, property valued at \$420,130.70 and an income of \$152,430.47. Charles A. Plumley, LL.D., is president.

NOTE CIRCULATION OF EUROPEAN COUNTRIES. See EUROPEAN COUNTRIES, NOTE CIRCULATION AND GOLD RESERVE OF BANKS OF ISSUE.

NOTRE DAME COLLEGE OF MARYLAND, a Catholic educational institution for women, founded in 1896 and located at Baltimore, Md. In 1922-23 it had a faculty of 14 members, and a student enrollment of 85. No information was given as to the value of the institution's property or its income. Sister Mary Philemon, S.S.N.D., is president.

NOTRE DAME UNIVERSITY (correct corporate name "University of Notre Dame"), a Catholic educational institution for men founded in 1842 and located at Notre Dame, Ind. Statistics for 1922-23 show a faculty of 108 members, a student enrollment of 1,950, and property valued at \$4,500,000. Income figures for the year not given. Matthew J. Walsh, Ph.D., is president.

NOVA SCOTIA, a Maritime Province of the Dominion of Canada. Area, 21,428 square miles; population in 1921, 523,837. Halifax, the capital, is the largest city and the chief naval station in Canada. Its population is 58,372. Other cities are: Sydney, 22,545; Glace Bay, 17,007; Amherst, 9,998; Dartmouth, 7,899; New Glasgow, 8,974; Sydney Mines, 8,327; and

Truro, 7,562. The provincial budget is balanced at \$4,000,000 approximately. The public debt in 1920 was \$17,941,871. The Province is administered by a Lieutenant-Governor, who holds office for five years and is appointed and paid by the Dominion Government. A Legislative Council appointed by the Crown and holding office for life forms part of the legislative system together with a House of Assembly of 43 members elected for five years. The Lieutenant-Governor in 1922 was McC. Grant; Premier, G. H. Murray. For Production, Industry, etc., see CANADA.

NUTS, Exports and Imports of. See HORTICULTURE.

NYASALAND, a British African Protectorate lying along the southern and western shores of Lake Nyasa and extending towards the Zambesi. Its area is 39,573 square miles with a population in 1921 of 1,427 Europeans; 561 Asiatics and 1,199,531 natives. The principal settlement is Blantyre but the seat of the government is at Zomba. Good roads are being extended in all directions between the various settlements. There are no government schools, but several missionary societies maintain schools for the native children. These schools number 2,030 with 120 European teachers and 117,638 pupils. Coffee, tobacco and cotton are the chief crops. Coffee exports in 1920 reached 64,362 pounds; tobacco exports to 4,963,000 pounds; and cotton, 1,149,000 pounds. Imports in 1921 were valued at £507,573 and exports at £670,072. The revenue the same year amounted to £268,018 and the expenditures to £261,868. The public debt amounts to £3,213,800. The trade ports are Port Herald, Kota-Kota, Karonga, and Fort Johnston. There is a rail line from Chindio on the Zambesi in Portuguese East Africa to Blantyre a distance of 174 miles. The Protectorate is administered under the Colonial Office by the Governor and Commander-in-chief, assisted by an Executive and a Legislative Council. The Governor and Commander-in-chief in 1922 was Sir George Smith.

NYDEGGER, James Archibald, American physician: b. Fort Pendleton, near Oakland, Alleghany County, Md., 26 June 1864. In 1890 he received the degree of B.L. from Saint John's College, Annapolis, Md., and the degrees of A.M. and D.Sc. from the same institution in 1912. In 1892 he was graduated with the degree of M.D. from the University of Maryland. On 1 July following his graduation he was appointed

assistant surgeon of the United States Public Health Service, becoming passed assistant surgeon 7 July 1896 and surgeon 4 Feb. 1909. Dr. Nydegger served at Baltimore, at Gulf Quarantine, Miss., Charleston, S. C., Reedy Island Quarantine, Del., South Atlantic Quarantine, Ga., New Orleans, Cape Charles, Va., and the quarantine stations at Cincinnati, New York, Liverpool, London, Paris, Madrid, etc. In 1898-99 he was in charge of the yellow fever post epidemic areation in the vicinity of New Orleans and served as executive officer in New Orleans during the epidemic of yellow fever there in 1899. In 1912, Dr. Nydegger originated hygienic survey in schools by the United States Public Health Service and from 1913-16 was professor of tropical medicine in the University of Maryland. In 1915 he was awarded the certificate of the London School of Tropical Medicine. Dr. Nydegger is author of several articles on public health; is a member of the American Public Health Association, the American Association for the Promotion of Hygiene and Public Baths, of the American Medical Association and of the Southern Society of New York.

NYE, Irene, American educator: b. Eureka, Kan., 12 Nov. 1874. She is a lineal descendant of John Howland of the *Mayflower* and of William Chesebrough, the first English settler of Stonington, Conn. She received her preliminary education at the Southern Kansas Academy, Eureka, Kan., and in 1895 was graduated with the degree of A.B. from Washburn College, Topeka, Kan. In 1911 she received the degree of D.Ph. from Yale University. From 1895-1901 she was teacher of Latin and Greek at Southern Kansas Academy; from 1905-08 was scholar in classics in Washburn College, and fellow in 1909-11 at Yale. In 1911-12 Miss Nye was professor of Latin at Washburn College, becoming professor of classic languages there in 1912. In 1915 she became assistant professor of Greek and Latin at the Connecticut College for Women, advancing to the professorship in 1916, which position she still holds, together with that of dean of the department since 19 May 1917. She is member of the American Philological Association, the New England Classical Association, and of the Archaeological Institute of America. She has published: 'Sentence Connection Chiefly Illustrated from Livy' (1911), and is a contributor to *The Classical Journal*, *Classical Philology*, and various educational journals. She has made a specialty of Plautine translation and investigation.

OATS. In its final report issued in December the Department of Agriculture estimated the 1922 oat crop of the United States at 1,215,496,000 bushels valued at \$478,548,000, compared with the 1921 crop of 1,078,341,000 bushels valued at \$325,954,000 and the 1920 crop of 1,496,281,000 bushels valued at \$688,311,000. The acreage for the three years was as follows: 1922, 40,693,000 acres; 1921, 45,495,000 and 1920, 42,491,000. The average yield per acre in 1922 was 29.9 bushels, compared with 23.7 bushels in 1921 and 35.2 bushels in 1920. The average price of the crop on 1 December was 39.4 cents per bushel, compared with 30.2 cents per bushel on 1 Dec. 1921 and 46 cents per bushel on 1 Dec. 1920. Iowa led the States in production with a total yield of 222,851,000 bushels, compared with 164,840,000 bushels in 1921 and 229,866,000 bushels in 1920. Minnesota was second with a production of 142,746,000 bushels, compared with 99,480,000 bushels in 1921 and 138,825,000 bushels in 1920. Illinois was third with a production of 110,010,000 bushels, compared with 121,741,000 bushels in 1921 and 171,193,000 bushels in 1920. Wisconsin was fourth with a yield of 101,558,000 bushels, compared with 63,958,000 bushels in 1921 and 107,878,000 bushels in 1920. North Dakota produced 78,804,000 bushels in 1922, 48,792,000 bushels in 1921 and 60,432,000 bushels in 1920. South Dakota produced 74,400,000 bushels in 1922, 58,300,000 bushels in 1921 and 75,446,000 bushels in 1920. Nebraska, which in 1920 produced 83,040,000 bushels, dropped to 70,054,000 bushels in 1921 and to 56,106,000 bushels in 1922. Pennsylvania, which produced 47,190,000 bushels in 1920, dropped to 35,283,000 in 1921, but increased its production to 41,242,000 in 1922. Texas produced 33,465,000 bushels in 1922, compared with 33,575,000 bushels in 1921 and 32,780,000 bushels in 1920. New York produced 31,770,000 bushels in 1922, 24,912,000 bushels in 1921 and 40,772,000 bushels in 1920. Oklahoma dropped from 54,450,000 bushels in 1920 to 35,300,000 bushels in 1921 and to 30,000,000 bushels in 1922. Kansas likewise dropped from 65,299,000 bushels in 1920 to 38,827,000 bushels in 1921 and to 28,386,000 bushels in 1922. Ohio, which produced 68,068,000 bushels in 1920, dropped to 35,650,000 bushels in 1921, increasing to 39,774,000 bushels in 1922. Montana, on the other hand, increased from 11,726,000 bushels in 1920 to 14,832,000 bushels in 1921 and 19,200,000 bushels in 1922. Missouri, which in 1920 produced 58,499,000 bushels, dropped to 42,960,000 bushels in 1921 and then down to 17,872,000 bushels in 1922.

The world production of oats in 1922 was estimated by the Department of Agriculture 18 November at 3,113,284,000 bushels. At that time it was stated that the total production of 24 countries amounted to 3,017,538,000 bushels, compared with 2,742,438,000 bushels for the same countries in 1921 and an average annual production of 3,007,782,000 bushels for the five-year

period from 1909-13. At the time this report was made, the 1922 Canadian crop was estimated at 558,358,000 bushels, compared with 426,233,000 bushels in 1921 and a five-year average crop for the years mentioned of 351,690,000 bushels.

No figures, it was asserted, were available for Austria, Denmark, Norway, Russia and Australia. The production of other European countries was estimated at a total of 1,169,830,000 bushels in 1922, compared with 1,175,223,000 in 1921 and a five-year average production for the years 1909-13 of 1,430,887,000 bushels.

OBERLIN COLLEGE, a non-sectarian co-educational institution, founded in 1833 and located at Oberlin, Ohio. In 1922-23 it had a faculty of 163 members, 1,798 students, property valued at \$6,444,867 and an income of \$752,663. Henry Churchill King, D.D., LL.D., L.H.D., is president.

OCCIDENTAL COLLEGE OF LOS ANGELES, a non-sectarian co-educational institution, founded in 1887 and located at Los Angeles, Calif. In 1922-23 it had a faculty of 36 members, 481 students, property valued at \$660,246 and an estimated income of \$110,000. Remsen duBois Bird, D.D., is president.

OCEAN DEPTHS, Measurement of. See PHYSICS.

OCEANIA, British. The British territories in Oceania comprise the self-governing states and territories which form the Commonwealth of Australia with the dependencies of Papua or New Guinea and Norfolk Island, the Dominion of New Zealand and dependent islands, the Colony of Fiji, the Solomon and Tonga Islands, and many lesser islands. For these see the articles on the territories above named.

OCEANIA, French Establishments in. The French possessions in Oceania comprise the Society Islands, the chief of which are Tahiti and Moorea, area, 650 square miles and a population of 13,255. Phosphate is the chief product; The Marquesas Islands, 480 square miles and a population of 3,424; The Tuamotu Islands, area, 160 square miles and population 3,828; The Leeward Islands, population 5,925; Gambier, Tubuai and Rapa Islands, population 4,000. The total area of the French Establishments is 1,520 square miles. They have a native population of 26,219; and a French population of 28,875. There are about 2,656 other Europeans and approximately 1,000 Chinese. Tahiti is the most important of the islands. Its chief town is Papeete with 3,617 inhabitants. Copra, mother of pearl, cocoanuts, oranges and vanilla are the chief products. The Establishments are administered by a Governor assisted by an Administrative Council. The budget for the year 1921 was balanced at 5,980,000 francs.

OFFICERS' RESERVE CORPS. See ARMY OF THE UNITED STATES.

OGDEN COLLEGE, a non-sectarian educational institution for men, founded in 1877 and located at Bowling Green, Ky. In 1922-23 it had a faculty of 9 members, and 95 students. Value of property and income not given. Charles E. Whittle is president.

OHIO, one of the east north-central States of the American Union, bounded on the north by Michigan and Lake Erie, east by Pennsylvania and West Virginia, south by West Virginia and Kentucky, and west by Indiana. The area of the State is 41,040 square miles and in 1920 it had a population of 5,759,394. Ohio is 35th in order of size and fourth in order of population among its sister States. Of the population in 1920, 5,571,893 were whites, 186,187 were negroes, 1,163 were Asiatics and 151 were Indians. In the same year the foreign-born residents of the State numbered 678,697 and included 111,893 Germans, 48,073 Austrians, 43,140 English, 29,262 Irish and 24,176 Canadians. The chief cities of the State, with their populations in 1920, are: Columbus, the capital, 237,031; Cleveland, 796,841; Cincinnati, 401,247; Toledo, 243,167; Akron, 208,435; Dayton, 153,559; Youngstown, 132,258; Canton, 87,091; Springfield, 60,840; Lakewood, 41,732; Lima, 41,326; Hamilton, 39,675 and Lorain, 37,295.

Religion.—The principal Christian denominations have an aggregate membership of 2,291,793. Of this number, 843,356 are Roman Catholics, 399,045 Methodists, 160,413 Presbyterians, 105,753 Baptists, 93,192 Lutherans, 56,101 members of the Reformed Church, 47,175 Episcopalians, and 45,606 Congregationalists.

Education.—Primary education is free and compulsory for all children from six to 18 years of age. There are in the State 9,753 public primary schools with 19,022 teachers and 868,449 pupils, and 574 public high schools with 5,943 teachers and 121,538 pupils. For higher education there are in the State about 40 universities and colleges, the more important of which are the State Universities at Columbus and Athens, Cincinnati University, Western Reserve University, Ohio Wesleyan University, Oberlin College, Miami University, Denison University, Wooster University, Wittenberg College, Kenyon College, Mt. Union College and the Case School of Applied Science.

Finances.—The balance at the beginning of the last fiscal year amounted to \$14,326,673.95. Receipts during the fiscal year amounted to \$56,929,119.73. Disbursements for the same period amounted to \$51,698,436.12, leaving a balance on hand at the beginning of the fiscal year 1922-23 amounting to \$19,957,357.56. The estimated receipts for the fiscal year 1922-23 amount to \$43,373,950. The bonded debt of the State in 1922 was \$25,000,000 and the floating debt, \$1,665, making a total State debt of \$25,001,665. The assessed value of real property was \$6,386,334,425; of personal property, \$4,358,323,898.

Agriculture.—Ohio has extensive agricultural interests. The census of 1920 reported 256,699 farms, and the total value of all farm property at \$3,095,666,336. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 3,823,000 acres, 149,097,000 bushels, \$98,404,000; spring wheat, 28,000 acres, 420,000 bushels, \$491,000; winter wheat, 2,516,000 acres,

35,224,000 bushels, \$41,212,000; barley, 73,000 acres, 1,424,000 bushels, \$926,000; clover seed, 206,000 acres, 227,000 bushels, \$2,429,000; oats, 1,472,000 acres, 39,744,000 bushels, \$17,885,000; buckwheat, 25,000 acres, 500,000 bushels, \$400,000; rye, 87,000 acres, 1,235,000 bushels, \$1,025,000; tame hay, 3,374,000 acres, 4,892,000 tons, \$52,834,000; sorghum sirup, 4,000 acres, 248,000 gallons, \$260,000; potatoes, 126,000 acres, 11,214,000 bushels, \$10,093,000; sweet potatoes, 3,000 acres, 360,000 bushels, \$486,000; tobacco, 52,000 acres, 46,800,000 pounds, \$8,892,000; apples, 7,298,000 bushels; peaches, 1,584,000 bushels; and pears, 450,000 bushels. On 1 January 1923 there were on the farms in the State 771,000 horses, valued at \$71,703,000; 32,000 mules, valued at \$3,104,000; 1,069,000 milk cows, valued at \$59,864,000; 857,000 other cattle, valued at \$27,167,000; 2,094,000 sheep, valued at \$14,867,000, and 3,091,000 swine, valued at \$37,401,000. Ohio raises much pure-bred livestock and the meat packing industry is well developed. The wool clip of 1921 was 13,200,000 pounds.

Minerals.—The State has extensive mineral resources, ranking fourth in the Union in value of mineral output. The chief products are coal and clay manufactures. Coal production in 1922 amounted to 26,500,000 tons and oil to 6,762,000 barrels. In 1920, 8,533,470 tons of pig iron were produced from 79 furnaces. Besides coal and iron the mineral wealth of the State includes glass sand, salt, petroleum, natural gas, limestone and sandstone, pyrite, potash, mineral waters and gypsum.

Manufacturing.—Manufacturing is very extensive. Of the 264 classifications of the Federal census, Ohio is a considerable producer in all but 46 and ranks first in 18. The rubber centre of the world lies within the State at Akron, where tires valued at \$545,812,000 were turned out in 1920. Youngstown, Canton and Steubenville are the chief centres of the iron and steel industry, while Lima is the centre of the oil industry. Toledo and Cleveland manufacture great numbers of automobiles. The value of all products is over \$2,250,000,000. Over 1,000,000 persons are employed in industries in 16,000 establishments.

Communications.—The State has 9,195 miles of steam railways and 4,169 miles of electric railways. Cleveland is one of the principal lake ports.

Government.—The State executive is a Governor, elected for two years, who receives a salary of \$10,000. The legislature is composed of two chambers, a Senate of 37 members and a House of Representatives of 125 members, the members of both houses being elected for terms of two years. Ohio sends two Senators and 22 Representatives to the Federal Congress. For local administration the State is divided into 88 counties. The legislature meets biennially in odd years.

Officials.—The Governor in 1922 was the Hon. Harry L. Davis, who was succeeded in January 1923 by A. V. Donahey, who was elected in November 1922 for the two-year term, ending January 1925. The Secretary of State in 1922 was Harvey C. Smith. Other State officials who entered office with Governor Donahey in 1923 were: Lieutenant-Governor, Earl D.

Bloom; Secretary of State, Thad. H. Brown, Attorney-General, Chas. C. Crabbe; Auditor, Joseph T. Tracy; Treasurer, Harry S. Day, and Superintendent of Education, Vernon Riegler.

Judiciary.—Members of Supreme Court: Hon. C. T. Marshall, Chief Justice; Hon. R. M. Wanamaker, Hon. James E. Robinson, Hon. Thomas A. Jones, Hon. Edward S. Matthias, Hon. Robert H. Day, and Hon. Florence E. Allen, Judges.

OHIO NORTHERN UNIVERSITY, a Methodist co-educational institution, founded in 1871 and located at Ada, Ohio. In 1922-23 it had a faculty of 48 members, 987 students, property valued at \$600,000 and an income of \$127,000. Albert Edwin Smith, D.D., Ph.D., is president.

OHIO WESLEYAN UNIVERSITY, a Methodist co-educational institution, founded in 1842 and located at Delaware, Ohio. In 1922-23 it had a faculty of 114 members, a total of 1,711 students (938 women, 773 men), property valued at \$1,300,307.88 and an income of \$407,522.62. John Washington Hoffman, M.A., D.D., LL.D., is president.

OILCLOTH AND LINOLEUM, Manufacture of. According to the Department of Commerce, there were 29 establishments engaged primarily in the manufacture of oilcloth and linoleum in the United States in 1921, which turned out products valued at \$62,799,000 as compared with products valued at \$68,110,000 turned out by 32 establishments in 1919. Of the 29 establishments reported for 1921, 12 were located in New Jersey; five in Pennsylvania; three each in Massachusetts and New York; two in Maine; and one each in Illinois, Indiana, Maryland and Ohio. New Jersey, the leading State in the industry in 1921, produced 34.3 per cent of the total value of products in that year. The average number of wage earners employed in the industry was 6,640 in 1921 and 6,544 in 1919. Wages paid totaled \$8,545,000 in 1921 and \$7,719,000 in 1919. Materials used cost \$34,919,000 in 1921 and \$41,509,000 in 1919. Oilcloth made on cotton back in 1921 was as follows: Enameled, 3,007,000 square yards; table, wall and shelf, 64,196,000 square yards. Linoleum made on jute back was as follows: Linoleum (including cork carpets) 26,247,000 square yards; inlaid linoleum, 12,554,000 square yards. Floor covering made on felt back totaled 31,728,000 square yards. Artificial leather manufactured during the year totaled 283,000 square yards as compared with 13,632,000 square yards manufactured in 1919. The large decrease in the production of artificial leather by the oilcloth and linoleum industry was partly caused by a change in classification, two of the important establishments in 1919 having changed the character of their products so as to be included in the upholstering industry in 1921. In 1921 there were 19 establishments included in the classification "upholstering materials not elsewhere specified" which reported the production of artificial leather valued at \$15,033,000, compared with products valued at \$26,282,000 reported by 17 establishments in 1919.

OIL OF CASSIA. See FOOD STANDARDS, FEDERAL.

OKLAHOMA, one of the west, south-central States, formerly known as Indian Territory, bounded north by Kansas, east by Arkansas and Missouri, south by Texas and west by Texas. Its area is 70,057 square miles and in 1920 it had a population of 2,028,283. It is 17th in order of size and 21st in order of population among the States of the Union. In 1920, whites among the population numbered 1,821,194, negroes numbered 149,408, Indians numbered 57,337 and Asiatics numbered 344. The foreign-born in the same year totaled 39,968 and included 17,029 Germans, 2,686 English, 5,005 Russians, 2,475 Canadians, 2,122 Italians, 1,393 Austrians and 1,120 natives of Scotland. The chief cities, with their population in 1920, are: Oklahoma, the capital, 91,258; Tulsa, 72,075; Muskogee, 30,277; Okmulgee, 17,430; Enid, 16,576; Shawnee, 15,348; Ardmore, 14,181 and McAlester, 12,095.

Religion.—The principal Christian denominations have a membership of 424,492 in Oklahoma, of whom 129,436 are Baptists, 113,202 are Methodists, 47,427 are Roman Catholics, 23,618 Presbyterians, 3,899 Lutherans, 3,566 Episcopalians, and 3,419 Congregationalists.

Education.—Separate schools are provided for white and colored children, all children not negroes being classed as white. There are in the State schools 510,139 whites and 41,276 colored pupils, and 14,181 teachers. The State maintains 605 public high schools with 1,954 teachers and 35,786 pupils. There are seven normal schools with 125 teachers and 4,660 students. For higher education the State maintains the university at Norman, and the Agricultural and Mechanical College at Stillwater, and also an Agricultural and Normal University for colored students at Langston.

Finances.—At the beginning of the last fiscal year there was on hand a balance of \$7,649,020. Receipts for the ensuing fiscal period amounted to \$41,374,406. Disbursements for the same period amounted to \$38,932,356, leaving a balance on hand of \$10,101,070. The State debt amounts to \$2,972,900, and the assessed value of real and personal property is \$1,664,448,745.

Agriculture.—Agriculture is one of the main interests of the State. The value of all crops in 1920, according to the Federal census, was \$522,565,000, with cotton production of 1,006,242 bales giving the State fourth place in the production of this staple. Dry farming is practised in the western part of the State. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 3,200,000 acres, 57,600,000 bushels, \$40,320,000; winter wheat, 3,300,000 acres, 31,350,000 bushels, \$30,723,000; barley, 129,000 acres, 2,193,000 bushels, \$1,206,000; oats, 1,500,000 acres, 30,000,000 bushels, \$13,500,000; rye, 31,000 acres, 310,000 bushels, \$248,000; broom corn, 180,000 acres, 18,000 tons, \$3,834,000; tame hay, 965,000 acres, 1,448,000 tons, \$18,100,000; sorghum sirup, 17,000 acres, 1,122,000 gallons, \$808,000; potatoes, 40,000 acres, 2,720,000 bushels, \$3,346,000; sweet potatoes, 27,000 acres, 2,052,000 bushels, \$2,421,000; cotton, 2,951,000 acres, 635,000 bales, \$73,025,000; peanuts, 17,000 acres, 10,540,000 pounds, \$401,000; grain sorghums, 1,450,000 acres, 19,575,000 bushels, \$15,660,000; apples, 1,140,000 bushels, peaches, 2,-

070,000 bushels, and pears, 197,000 bushels. On 1 Jan. 1923 there were on the farms in the State 715,000 horses, valued at \$28,600,000; 337,000 mules, valued at \$19,244,000; 1,364,000 other cattle, valued at \$22,915,000; 87,000 sheep, valued at \$505,000, and 1,401,000 swine, valued at \$12,329,000. Flax is an important crop. The wool clip of 1920 was 526,000 pounds.

Mineral and Other Products.—Oklahoma has come into front rank in recent years because of its vast stores of petroleum. In 1922 the production of oil was 146,631,000 barrels. Natural gas is also found, and in 1922, 2,800,000 tons of coal were mined. Other mineral products are lead and zinc. The chief manufacturing industries are flour and grist milling, cotton ginning and the manufacture of cottonseed oil and oil cake. Zinc is smeltered and refined in the State. There are 2,445 industrial establishments in Oklahoma, employing 38,314 persons and capitalized at \$260,000,000. The value of the zinc output in 1920 was \$19,518,000; that of the foundries and machine shops, \$13,510,000, while 25 other industries had an output exceeding in value \$500,000.

Communications.—There are 6,527 miles of steam railways and 331 miles of electric railways in the State.

Government.—The State executive is a Governor, elected for four years, who receives a salary of \$4,500. The legislature comprises two chambers, a Senate of 44 members, elected for four years, and a House of Representatives of not less than 99 nor more than 102 members, elected for two years. The constitution provides for the initiative and the referendum. Eight per cent of the legal voters have a right to propose any legislative measure and 15 per cent of the voters may propose amendment to the constitution by petition. The referendum may be ordered except in emergencies either by petition signed by 5 per cent of the voters or by the legislature. The State sends two Senators and eight Representatives to the Federal Congress. Indians in order to qualify as voters must have severed their tribal relations. The Governor in 1922 was the Hon. J. B. A. Robertson, who was succeeded in January 1923 by the Hon. J. C. Walton, who was elected in November 1922 for the four-year term, ending January 1927. The Secretary of State in 1922 was Joe S. Morris.

OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, a State co-educational institution founded in 1891 and located at Stillwater, Okla. In 1922-23 it had a faculty of 113 members, 3,100 students, property valued at \$2,133,779.11 and an income of \$741,850. President, James Burnette Eskridge, A.M., Ph.D.

OKLAHOMA BAPTIST UNIVERSITY, a co-educational institution, founded in 1915 and located at Shawnee, Okla. In 1922-23 it had a faculty of 28 members, 665 students, property valued at \$320,000 and an income of \$105,000. John Benjamin Lawrence is president.

OKLAHOMA CITY COLLEGE, a Methodist-Episcopal co-educational institution, founded in 1911 and located at Oklahoma City, Okla. In 1922-23 it had a faculty of 28 members, 464 students, property valued at \$330,000

and an income of \$52,000. Edwin G. Green, A.B., is president.

OKLAHOMA COLLEGE FOR WOMEN, a State educational institution, founded in 1898 and located at Chickasha, Okla. In 1922-23 it had a faculty of 43 members, 520 students, property valued at \$890,000 and an income of \$118,750. G. W. Austin, B.S., is president.

OKLAHOMA, University of, a State co-educational institution, founded in 1890 and located at Norman, Okla. In 1922-23 it had a faculty of 208 members, 3,408 students in first semester, property valued at \$2,413,312.14 and an income of \$949,252. Stratton Duluth Brooks, LL.D., is president.

OKUMA, MARQUIS Shigenobu, Japanese statesman: b. Saga, Hizen, February 1838; d. Waseda, a suburb of Tokio, 10 Jan. 1922. His father, a Samurai, was an artillery officer and is said to have planned that his son also should enter the military service. The early years of young Okuma's life were devoted mainly to the study of Chinese literature. Later in Nagasaki, where his father at one time commanded the garrison, he acquired a knowledge of English and Dutch, gaining from a study of scientific and political books in both languages, which he secured through the aid of some missionaries, many of the progressive ideas which were the foundation of his future greatness. At that time Nagasaki was the centre of the new Occidental learning. Okuma soon became an admirer of Western political ideas, and eventually came to know American history better than the average American. Thomas Jefferson is said to have been his ideal statesman. Undoubtedly, his study of Occidental ways was in no small degree responsible for his early determination to devote his energies to the abolition of the existing feudal system of his country, the establishment of a constitutional government, the restoration to power of the Emperor, and the abolition of the Shogunate. His persistent and courageous advocacy of these reforms was largely instrumental in bringing about the revolution of 1867 which resulted in bringing the Shogunate rule to an end. Shortly after the reorganization of the government Okuma was appointed chief assistant in the office of Foreign Affairs. In 1869 he was made Minister of Finance; in 1870 he was made a councillor of state and a few months later was chosen president of the commission that represented the Japanese government at the Vienna exhibition. In 1872, he again was appointed Minister of Finance and this time held the post until 1881, when he resigned because of a disagreement with Marquis Ito, the Premier. He discharged the duties of his office with conspicuous ability. In 1882 he organized the Progressive Party of which he was for many years the leader. Six years later he was persuaded to accept the post of Foreign Minister in the Kuroda Cabinet. Japan was then beginning her attempts to secure a revision of her treaties with foreign powers and to regain the rights of sovereignty which she had been forced to sign away. The premature publication of a draft of the treaty which Okuma had negotiated disclosed the fact

that provision had been made for the retention of foreign judges in Japanese courts. This concession aroused such violent opposition that upon one occasion a political fanatic attempted Okuma's assassination, hurling at his carriage a dynamite bomb which so shattered one of his legs that it had to be amputated. Okuma resigned after a few months, service and did not again hold office until 1896 when he was appointed Minister of Agriculture and Commerce in the Matsukata Cabinet. This post he resigned the following year because of an estrangement between himself and the Prime Minister. When Marquis Ito retired as Prime Minister in 1893, Okuma was chosen to head a cabinet of his own and served in the dual capacity of Premier and Minister of Foreign Affairs. Again his tenure of office was short-lived, dissensions among the members of his official family causing him to resign within a few months. He retired to Waseda and soon thereafter became president of Waseda University, one of the largest universities under private management in Japan and of which he was the founder. In 1919-20, the students enrolled numbered 4,100, and it had a faculty of 141 members. Okuma was president of the institution until his death. When the Yamamoto Cabinet was overthrown in March 1914, Okuma again was called upon to organize a new cabinet. He accomplished the task on the 15 April following, assuming the duties of Premier and Minister of Home Affairs. In the latter part of July of that year, the World War broke out and Okuma formulated Japan's policy with regard thereto. In July 1915 the Okuma Cabinet resigned as a result of investigations into bribery cases growing out of preceding Parliamentary elections, but at the request of the Emperor, Okuma decided to remain in office and reconstructed his cabinet the following month. A second attempt to assassinate him was made in January 1916, also by a bomb-thrower. Attacks upon his cabinet led to its downfall in October 1916 and once more he retired to Waseda, where he spent the remainder of his days. Frequently referred to as the "Sage of Waseda" and called by some the "Grand Old Man of Japan," Okuma, despite the occasional outbreaks of public disapproval which some of his official acts aroused, retained his popularity among his countrymen to the last. He was, perhaps, as near an approach to a real Democrat as Japan had ever produced. He was a fluent, forceful and popular speaker. He liked to appear in public and rarely a night passed that he did not attend a banquet or some other popular gathering, usually being one of the speakers on such occasions. Soon after becoming president of Waseda University, he succeeded in getting Japan's greatest scholars to collaborate on 'Fifty Years of New Japan' which was published in English. He published numerous pamphlets, magazine and newspaper articles, especially with reference to political matters. Ever an advocate of higher education, he did as much to advance the cause of learning in the Japanese empire as, perhaps, any other individual of his time. In addition to Waseda University, he founded also the Japanese Women's University. He was an enthusiastic horticulturist and at Waseda had a remarkable

collection of tropical plants and what is said to have been the finest collection of orchids in the Japanese empire.

OLIVET COLLEGE, a Congregational co-educational institution, founded in 1844 and located at Olivet, Mich. In 1922-23 it had a faculty of 23 members, 310 students, property valued at \$90,000 and an income of \$60,000. Paul F. Voelker, Ph.D., is president.

OMAHA, University of, a non-sectarian co-educational institution, founded in 1909 and located at Omaha, Neb. In 1922-23 it had a faculty of 23 members, and approximately 600 students, property valued at \$175,000 and an income of \$35,000. Daniel E. Jenkins, D.D., is president.

OMAN, an independent State of southeastern Arabia, the integrity of which has been guaranteed by both Great Britain and France. It extends along the southern shore of the Gulf of Oman and has a coast line nearly 1,000 miles long. Inland it extends to the Great Desert of Arabia. The area is about 82,000 square miles with a population of 500,000, mostly Arabs though there is an infusion of negro blood in the coast settlements. Muskat is the capital. The latter is being abandoned for the better site of the adjacent Muttrah. The present Sultan is Seyyid Taimur bin Feysil, who succeeded on 5 Oct. 1913. The products of the country are dates, fruit, limes, hides and skins. The exports are valued at 140,000 pounds sterling yearly with imports one-third less than this amount. Rice and cotton textiles are the chief imports. The British Political Agent and Consul in 1922 was Major M. E. Rae, I.A. There is a weekly mail service to and from Bombay and there exists cable communication with the Indo-European telegraph system.

ONIONS. The commercial crop of late onions grown in the United States in 1922 was estimated by the Department of Agriculture at 24,074 cars of 500 bushels each. Production in 1921 was 18,823 cars. The yield per acre in 1922 was estimated at 309 bushels with 259 bushels in 1921. Idaho, in 1922, produced as much as 460 bushels per acre while Michigan and Utah had yields up to 400 bushels per acre. The area of the 1922 crop was 38,991 acres compared with 36,381 acres in 1921. New York State led in production with a crop of 4,476 cars; Ohio was second with 4,184 cars; Indiana came third with 3,473 cars. California produced 3,262 cars; Massachusetts, 2,508 cars; Michigan, 1,386 cars; Colorado, 1,067 cars; Minnesota, 1,058 cars; Illinois, 750 cars. Other States produced less. Of the production of 24,074 cars, it was estimated that 2,896 cars, 12 per cent of the crop, went to nearby markets; that 20,194 cars, or 84 per cent of the crop, went to distant markets, and that 984 cars, or 4 per cent of the crop, were not marketed.

ONTARIO, the second largest Province of the Dominion of Canada, lying between Quebec and Manitoba. It has an area of 407,262 square miles and in 1921 had a population of 2,933,662. Toronto, the capital, has a population of 521,893. Other cities of the Province are: Hamilton, 114,151; Ottawa, 107,843; London, 60,959; Windsor, 38,591; Brantford, 29,440; Kingston,

21,753; Kitchener, 21,763; Sault Ste. Marie, 21,092; Fort William, 20,541; Guelph, 18,128; Peterborough, 20,994; St. Catharines, 19,881; St. Thomas, 16,026, and Stratford, 16,094. The Province is administered by a Lieutenant-Governor, a cabinet and one chamber of 111 members. Members of the chamber are elected for four years. Lieutenant-Governor in 1922, Colonel Harry Cockshutt; Premier, E. C. Drury. For industry, production, etc., see CANADA.

OPIUM. See LEAGUE OF NATIONS; NARCOTICS.

ORANGE FREE STATE, a Province of the Union of South Africa (q.v.).

ORANGES. Practically all of the commercial oranges produced in the United States are grown in Florida and California. The orange crop of 1922 was estimated by the Department of Agriculture at 24,900,000 boxes, compared with 20,300,000 boxes in 1921 and 29,700,000 boxes in 1920. Florida produced 8,400,000 boxes in 1922, 7,300,000 boxes in 1921 and 8,100,000 boxes in 1920. California produced 6,500,000 boxes in 1922, 13,000,000 boxes in 1921 and 21,600,000 boxes in 1920. The total value of the 1922 crop was \$61,395,000, compared with \$49,175,000 in 1921 and \$64,908,000 in 1920. The average price of oranges on 1 Dec. 1922 was \$2.47 per box, compared with \$2.42 per box in 1921 and \$2.19 per box in 1920. Alabama's crop of Satsuma oranges (not included by the Government in the foregoing estimate) totaled 330,000 boxes, of which 285,000 were classed as commercial. The crop is localized in two counties on the Gulf of Mexico. During the summer of 1922 a trial shipment of oranges grown in Chile was received in New York and gave such satisfaction that more were ordered immediately. Plans were then worked out for regular importations and according to the United States Department of Commerce 10,000 crates were shipped from Valparaiso to New York during the season. In 1921 there were 2,228 fruit bearing orange trees in Arica province, Chile, from which it is expected oranges will be shipped to the United States in the near future.

ORE DETECTOR, an instrument which by means of an electric current indicates the presence of metallic ore at distances under the ground. It measures currents of electricity flowing from ore bodies where they are generated by the chemical action of water, air and minerals on the ore. Each ore body, where chemical actions are taking place, is said to be a natural battery. If the pure metal exists, unattacked by chemicals, or if the chemical action has come to an end, there is no electrical current and the detector does not operate. In the latter case an independently generated current is used to indicate the presence of mineral ore. The detector is the invention of Dr. Conrad Schlumberger, professor of Physics at the Paris School of Mines, who at first employed it to detect the presence of unexploded shells. The instrument consists fundamentally of a wire which picks up electricity from two points on the earth and of a dry battery which produces another current. The latter current is forced into the wire until it counteracts and stops the elec-

tric flow from the ground. When the two currents are equal and opposite an indicator points to zero. Since it is possible to measure to the one-thousandth part of a volt the current from the dry battery the amount of electricity in the earth is easily determined.

The battery with its measuring equipment is called the potentiometer and may easily be carried by a man. The wire through which the current from the earth flows is attached at each end to electrodes which are in contact with the ground. The entire apparatus is easily moved from place to place, making possible the taking of several measurements in a short time.

Although the instrument will measure very minute currents it gives no indication as to the metal or mineral which produces them. The strength of the current and the area over which it is spread tells much about the probable size and richness of the ore. The known mineralogical character of the locality will usually indicate the nature of the metal. In its present stage of development the instrument will detect ore at a distance of 100 feet below the level of the ground and even deeper at times. Its principal value is to show where drillings should be made. It works on anthracite coal as well as on metallic ores, but will not indicate the presence of bituminous coal because of the non-conductile quality of the latter. In the anthracite the current is very probably due to the presence of minute particles of iron in the carbon. The ores on which it will not work are all metals in a pure state, lead sulphide, zinc sulphide, iron oxides, manganese oxides, and none of the carbonates or sulphates or other oxides, because in them the chemical activity has reached a conclusion. For instance, gold can not be detected when it is pure, but can be detected in iron pyrites where it is held, as it were, in solid solution. Stray earth currents at times disturb calculations but they are soon discounted. The instrument is so sensitive that in a trial near Wilkes-Barre it was affected by the current from a trolley line half a mile away. When an electric motor is anywhere near the indicating needle oscillates wildly. Although of very recent invention the detector has been used to detect nickel deposits in Canada, copper in Michigan and Tennessee, and coal in Wilkes-Barre, Pa.

OREGON, one of the Pacific Coast States, bounded north by Washington, east by Idaho, south by California and Nevada, and west by the Pacific Ocean. The area of the State is 96,699 square miles and in 1920 it had a population of 783,389. Oregon is ninth in order of size and 34th in order of population. In 1920 the population included 769,176 whites, 2,144 negroes, 7,510 Asiatics and 4,589 Indians. The foreign-born population in 1920 was 102,151, of whom 10,532 were Swedes, 13,740 Germans, 13,744 Canadians, 7,953 English, 4,213 Irish, 4,324 Italians, 6,955 Norwegians and 1,928 Greeks. Indian reservations occupied 1,860 square miles in 1920 and had a population of 6,629. The population is about equally divided between urban and rural. The chief cities, with their populations in 1920, are: Portland, 258,288; Salem, the capital, 17,679; Eugene, 14,027; Astoria, 10,595; Pendleton, 7,387; La Grande,

6,913; Medford, 5,756; Baker City, 7,729; Corvallis, 5,752, and Oregon City, 5,686.

Religion.—The principal Christian denominations have a total membership of 179,468. Of these, 49,728 are Roman Catholics, 30,381 Methodists, 16,672 Presbyterians, 15,635 Baptists, 6,373 Congregationalists, 5,726 Episcopalians, and 4,499 Lutherans.

Education.—Primary education is free and compulsory for all children between the ages of nine and 15. There are in the State 2,527 primary schools with 6,915 teachers and 160,924 enrolled pupils, and 235 high schools with 1,164 teachers and 29,235 pupils. For higher education there are an Agricultural College at Corvallis, and the State University at Eugene. In addition, there are several denominational colleges. The percentage of illiteracy for the State is 1.5 per cent; that of native born four-tenths of 1 per cent.

Finances.—At the beginning of the two-year period, 1 Oct. 1920 to 30 Sept. 1922, the balance on hand in the State treasury amounted to \$1,160,845.50. Receipts from 1 Oct. 1920 to 30 Sept. 1922 amounted to \$81,312,806.48. Disbursements for the same period amounted to \$78,119,825.38, leaving a balance on hand 1 Oct. 1922 amounting to \$4,353,826.60. On 1 Oct. 1922 the total bonded indebtedness of the State was \$50,759,020.

Agriculture.—Oregon is a semi-arid State with the Cascade Range dividing the State into regions of good rainfall and an arid zone. West of the Cascades almost every variety of crop grown in the temperate zone is produced. East of the Cascades the climate is dry and cold with little or no rainfall, but irrigation by private companies and by the State has enabled agriculture to make a beginning in recent years. The value of all crops in 1920 was \$131,884,000, wheat in the lead with 20,000,000 bushels. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 69,000 acres, 2,277,000 bushels, \$2,072,000; spring wheat, 249,000 acres, 2,864,000 bushels, \$3,093,000; winter wheat, 844,000 acres, 16,880,000 bushels, \$18,230,000; barley, 80,000 acres, 2,160,000 bushels, \$1,598,000; clover seed, 5,000 acres, 5,000 bushels, \$60,000; oats, 267,000 acres, 6,675,000 bushels, \$3,805,000; rye, 37,000 acres, 444,000 bushels, \$377,000; hops, 12,000 acres, 9,600,000 bushels, \$864,000; tame hay, 965,000 acres, 1,930,000 tons, \$26,248,000; potatoes, 49,000 acres, 5,145,000 bushels, \$2,675,000; apples, 6,300,000 bushels; peaches, 300,000 bushels, and pears, 1,260,000 bushels. The Federal census reported 50,206 farms in 1920 with a total acreage of 13,542,318, of which 4,913,851 acres was improved land. The total value of all farm crops was \$818,559,751 in 1920. The wool clip was 14,040,000 pounds. The fruit industry is one of the most important in the country. Apples, peaches, pears, prunes, apricots and plums of all kinds are grown in the Hood River, Medford and The Dalles districts. Dairy farming is increasing rapidly and livestock raising is extensive. On 1 Jan. 1923 there were in the State 272,000 horses, valued at \$22,032,000; 14,000 mules, valued at \$1,064,000; 220,000 milk cows, valued at \$13,200,000; 626,000 other cattle, valued at \$17,653,000; 1,953,000 sheep, valued at \$12,490,000, and 231,000 swine, valued at \$2,587,000.

Fisheries.—Oregon has great salmon fisheries rivaling the State of Washington in this particular. The oyster fisheries are also important, while the catches of sturgeon and halibut are very large.

Forestry.—It is estimated that Oregon has 500,000,000 board feet of standing timber, or one-sixth of the United States' total. About 20,000,000 acres are under forest. The chief varieties of lumber produced are Douglas and white fir, hemlock, spruce, cedars, larch, yellow pine and redwoods. Oregon lumber is shipped to all parts of the world, more than a billion feet passing through the Panama Canal yearly on its way to the Atlantic.

Manufactures and Mining. In 1920 manufactured products of Oregon were valued at \$366,783,000, the lumber products leading with \$85,348,000. Flour was second with a value of \$42,550,000. The other principal industries are ship building, meat packing and canning. Salmon canneries in and about Astoria are among the largest in the world. The State has some mineral resources. Gold, silver and copper are found. Coal is mined but not in large quantities. Granite and other building materials are quarried to the value of about \$500,000 yearly. Other minerals found are cobalt, platinum, lead and gypsum. The production of metals in Oregon in 1922 shows a decrease of \$252,000, as compared with 1921. The loss was entirely in gold, but silver and copper showing increases. The value of the gold produced decreased from \$882,034 in 1921, to \$501,870 in 1922. In recent years the usual ratio of gold production has been about 54 per cent from placers and 46 per cent from deep or quartz mines, and the deep mines have been decreasing their gold output while the placers have been increasing theirs. There are more hydraulic mines in Oregon than of any other class, but most of them are small. The silver output of Oregon for 1922 is estimated at 47,000 ounces, an increase of 11 per cent in quantity and value over 1921. The estimated output of copper in 1922 is 1,089,000 pounds, valued at \$145,000, an increase of 914,700 pounds, and \$123,000. This increase is due almost entirely to the resumption of production by the largest copper mine in the State, which was idle in 1921. At the end of 1922 there were less than 100 productive metal mines in Oregon and no new ones of special importance began operations in 1922.

Communications.—The State has very important navigation facilities. The Columbia River is one of the great Western waterways and carries a large freight tonnage along the whole of the 400 miles of its course from the Idaho border. The Snake River also has a large traffic and plans for its further development have been projected. The State has a steam railroad mileage of 3,455 miles and 722 miles of electric railways. The great Columbia Highway, one of the most beautiful in America, lies within the State, running along the Columbia River from Portland. In recent years Oregon has become a favorite vacation ground for many thousands from other States, some patronizing the coast resorts in Portland with its mild climate, while others seek the mountains, Crater Lake, etc.

Recent Political History.—One of the great issues of the year in Oregon was the campaign waged over the adoption of the law designed to do away with all private schools and all parochial schools, at which a feature of the teaching is instruction in religious matters. The title of the law was Compulsory Education, and the purpose, as defined by the advocates of the law was "to require any parent, guardian or other person having control, charge or custody of a child over eight and under 16 years of age from and after 1 Sept. 1926 to send such child to a public school during the entire school year excepting: (a) children physically unable; (b) children who have completed the eighth grade; (c) children between the ages of eight and 10 living more than one and one-half miles, and children over 10 years living more than three miles from a public school, except when transportation is furnished; (d) children taught by parent or private teacher." The reasons in support of the law were outlined by its advocates and purported to be the assimilation and education of foreign-born citizens in the principles of American government, which would be best secured by and through attendance of all children in public schools, preventing those coming into the State from forming groups, establishing schools and bringing up their children in an environment often antagonistic to the principles of the American government. Six elements of the voting population of Oregon opposed the compulsory education law, the Episcopalians, the Lutherans, the Catholics, the Presbyterians, Seventh Day Adventists, and representatives of the private schools. The law was the outstanding issue of the campaign and many persons attributed the defeat of Governor Olcott for re-election to the fact that he had identified himself early in the campaign with those opposed to the measure, while his opponent had the support of the advocates of the law. At the election 7 November the law was adopted by the voters and immediately thereafter its opponents prepared an appeal to the courts on the ground that the law is unconstitutional, in that it denies the primary right of the parent to select the mental and moral training of the child.

Government.—The State executive is a Governor, who is elected for a term of four years and receives a salary of \$5,000. The legislative power is vested in a Legislative Assembly. The initiative and referendum is part of the legislative system. The legislative assembly consists of a senate of 30 members, elected for four years, and a house of representatives of 60 members, elected for two years. Under the constitution considerable power in initiating laws and amendments and enacting and rejecting the same is reserved to the people. The Governor in 1922 was Ben W. Olcott, who was defeated for re-election in November 1922, and was succeeded in January 1923 by Walter M. Pierce.

State Officials.—Governor, Walter Pierce; secretary of state, Sam A. Kozer; attorney-general, I. H. Van Winkle; treasurer, O. P. Hoff, and superintendent of education, J. A. Churchill.

Judiciary.—Members of Supreme Court: Chief Justice McBride, Judge Bean, Judge Barnett, Judge Harris, Judge Brown, Judge Rand and Judge McCourt.

OREGON AGRICULTURAL COLLEGE, a State co-educational institution, founded in 1868 and located at Corvallis, Ore. In 1922-23 it had a faculty of 450 members, 4,548 students, 3,400 of whom are in regular long courses (nine months), property valued at \$3,386,680 and an income of \$1,661,825. William Jasper Kerr, Sc.D., is president.

ORGANIZED RESERVES. See ARMY OF THE UNITED STATES.

ORTH, Samuel Peter, American educator: b. Capac, Mich., 1 Aug. 1873; d. Nice, France, 26 Feb. 1922. He was graduated from Oberlin College with the degree of B.S. in 1896; studied law and political science at the University of Michigan, 1896-97, and was graduated from Columbia University with the degree of Ph.D. in 1903. He was professor of political and social science, Buchtel College, Akron, Ohio, 1897-1902; practiced law at Cleveland, Ohio, 1903-12, and was professor of political science at Cornell University thereafter until his death. He was a lecturer on international law, economics, and political science at Western Reserve University, the Case School of Applied Sciences, and Oberlin College, 1904-10. From 1904-05 he was president of the Cleveland board of education and from 1905-08 was assistant United States attorney. In 1894 he was a member of the Cook Arctic Expedition to Greenland. He wrote 'Centralization of Administration in Ohio,' 'Five American Politicians' (1903); 'The History of Cleveland' (1909); 'Socialism and Democracy in Europe' (1913); 'Readings on the Relation of Government to Industry' (1915); 'The Imperial Impulse' (1916); 'The Boss and The Machine' (1918). He was a frequent contributor to literary, political and professional journals.

OSGOOD, Irène (née de Belot), American author: b. Virginia, 1875; d. Guilborough Hall, Northamptonshire, England, 12 Dec. 1922. Although from childhood most of her life was spent in England and Paris, Mrs. Osgood never surrendered her American citizenship. She was twice married. Her first husband, to whom she was married in 1903 and who died in 1904, was Capt. Charles Pigott Harvey, high sheriff of North Hants, England, and Lord of the Manor in Lincolnshire. Her second husband was Robert Harborough Sherard, an English author and nephew of the poet Wordsworth, divorced by her in 1915. The name Irène Osgood was granted her by Royal Deed-Pole. She was a member of the Society of Authors, the Royal Literary Fund Society, the Institut des Lettres Française, the Foreign Theatre Society, Les Amies de Pigeon, the Royal Agricultural Society, the Royal Society of Arts, the Ethnological Society, the Royal Botanical Society, the Royal Rose Society, the Society for the Protection of Wild Birds, the Authors League of America etc. During the World War she maintained and managed three hospitals for wounded soldiers on her estate which she placed at the disposal of the Red Cross. She published: 'An Idol's Passion' (1895); 'The Chant of a Lonely Soul' (1896); 'Litanies to Tanet' (adapted from the French, 1896); 'To a Nun Confessed' (1907); 'Servitude' (1908); 'Where Pharaoh Dreams' (1909, 1913); 'A Blood

Moon (1911); 'A Mother in Dreams' (poems, 1913); 'The Indelicate Duellist' (1913); also several short stories. In addition to the foregoing, she also published a number of plays, including: 'Servitude,' 'The Pale Witch Queen,' 'Fatima Yasmeen,' 'The Southern Widow,' 'Une Aventure du Capitaine Lebrun,' produced in Paris, 1913; 'The Menace,' produced 1914. She compiled: 'The Winged Anthology' and 'The Garden Anthology.'

OTTAWA UNIVERSITY, a Christian-Baptist coeducational institution founded in 1865 and located at Ottawa, Kan. In 1922-23 it had a faculty of 25 members, 482 students, property valued at \$1,000,000 and an income of \$95,000. Silas Eben Price, D.D., is president.

OTTERBEIN COLLEGE, a coeducational institution of the United Brethren, founded in 1847 and located at Westerville, Ohio. In 1922-23 it had a faculty of 36 members, 520 students, property, including endowment, valued at \$1,034,963.42 and an income of \$160,000. Walter G. Clippinger, D.D., is president.

OTTLEY, James Henry, American publisher: b. Phelps, Ontario county, N. Y., 8 Oct. 1851; d. New York City, 3 March 1922. He was the son of Enoch Ottley and Frances Elizabeth Henry Ottley, both descendants of Mayflower pilgrims. After graduation from the Canandaigua Academy, he went West, where he found employment in Bloomington, Ill., and later in Saint Louis, Mo. In 1882 he went to New York, and thereafter traveled extensively in this country and abroad. His publishing career began in 1893, when he bought the McCall Company, publishers of *McCall's Magazine*, at a time when the financial returns from the maga-

zine were not indicative of great success, and, securing the devotion and co-operation of all his employees, the business prospered. He retired in 1913, a millionaire, and to his faithful employees he gave \$100,000 in amounts proportionate to their length of service. Mr. Ottley asserted he distributed this fortune "because no man can make a great success alone. He must have the help of others. My employees had been my helpers. It seemed unfair to leave the business and give them no share in its surplus earnings."

OUACHITA BAPTIST COLLEGE, a coeducational institution, founded in 1886 and located at Arkadelphia, Ark. In 1922-23 it had a faculty of 21 members, 301 students, property valued at \$350,000 and an income of \$75,000. Charles E. Dickon, A.M., D.D., LL.D., is president.

OUR LADY OF THE LAKE COLLEGE, a Catholic educational institution for women, founded in 1896 and located at San Antonio, Texas. In 1922-23 it had a faculty of 31 members, 256 students, and property valued at \$530,942. Very Rev. H. A. Constantineau, D.D., is president.

OXYGEN, Liquid. See CHEMICAL MANUFACTURING.

OZARKS, College of the, a coeducational institution, of the Presbyterian Church of the United States, founded in 1884 and located at Clarksville, Ark. In 1922-23 it had a faculty of 17 members, 140 students, property valued at \$150,000 and an income of \$30,000. Hubert S. Lyle, D.D., is president.

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PACIFIC COLLEGE, a Friends coeducational institution, founded in 1891 and located at Newberg, Ore. In 1922-23 it had a faculty of 16 members, 165 students and 40 more in music department. The institution's property was valued at \$66,000, and it had an endowment of \$200,000 and an income of \$20,000. Levi T. Pennington, A.B., is president.

PACIFIC, College of the, a Methodist coeducational institution, founded in 1851 and located at San Jose, Calif. In 1922-23 it had a faculty of 36 members, 447 students, property valued at \$270,000 and an income of \$147,500. Tully Cleon Knoles, D.D., is president.

PACIFIC QUESTION. See WASHINGTON CONFERENCE.

PACIFIC UNION COLLEGE ASSOCIATION, a Seventh Day Adventist coeducational institution, founded in 1909 and located at Saint Helena, Calif. In 1922-23 it had a faculty of 30 members, 364 students, property valued at \$233,347.68 and an income of \$164,674.58. William E. Nelson, B.S., is president.

PACIFIC UNIVERSITY, a Congregational, coeducational institution, founded in 1849 and located at Forest Grove, Ore. In 1922-23 it had a faculty of 25 members, 290 students, property valued at \$400,000 and an income of \$51,000. William Clarence Weir is president.

PACKERS AND STOCKYARDS ACT. See AGRICULTURE IN THE UNITED STATES, subsection AGRICULTURAL LEGISLATION.

PADGETT, Lemuel Phillips, American public official: b. Columbia, Tenn., 28 Nov. 1855; d. Washington, D. C., 2 Aug. 1922. He was graduated from Erskine College at Due West, S. C., in 1876, receiving from the same college the degree of LL.D. in 1916. He studied law, was admitted to the bar in 1877, and had practised since 1879 at his birthplace, Columbia, Tenn. He was a presidential elector in 1884, a member of the Tennessee State Senate from 1898-1900, later a member of the National Monetary Commission, and a regent of the Smithsonian Institution. A member of Congress after 1901, he was regarded as one of the ablest and most respected men in the House and enjoyed the confidence of the Republicans as well as of his Democratic colleagues. Always a firm friend of the Navy, Representative Padgett was in large measure responsible for the legislation directed toward maintaining the strength of the sea forces. At times he firmly opposed members of his own party who wished to reduce the personnel of the Navy below the safety limit suggested. During the Wilson Administration when the Democrats controlled Congress, he was chairman of the Naval Affairs Committee.

PAGE, Gertrude, English author: d. Salisbury, Rhodesia, 1 April 1922. She was a daughter of John E. Page of Woburn Lands

and Bedford, and was married to George Alexander Dobbin, son of Capt. R. A. Dobbin, Indian Staff Corps of Armagh, Ireland. Her novels, written under her maiden name are: 'Love in the Wilderness,' 'The Edge of Beyond,' 'The Silent Rancher,' 'Two Lovers and a Lighthouse,' 'Winding Paths,' 'The Rhodesian,' 'The Great Splendour,' 'Where the Strange Roads go Down,' 'The Pathway,' 'Follow Aiter,' 'The Supreme Desire,' 'Some There Are,' 'The Veldt Trail,' 'The Course of my Ship' (with R. A. Foster-Melliar) and 'Paddy the Next Best Thing.' The last named story was dramatized by Robert Ord and Gayer Mackay for the Savoy Theatre, London.

PAGE, Thomas Nelson, American author and diplomat: b. Oakland Plantation, Hanover county, Va., 23 April 1853; d. there, 1 Nov. 1922. He was directly descended from Governor John Page, an intimate friend of Thomas Jefferson, and from Gen. Thomas Nelson, one of the signers of the Declaration of Independence. His father, Major John Page, served in the Confederate army on the staff of Gen. William Nelson Pendleton. He was educated at Washington College, now Washington and Lee University, and thereafter studied law at the University of Virginia from which he was graduated LL.B. in 1874. The degree of Litt.D. was conferred upon him by Washington and Lee University in 1887, by Yale University in 1901, and by Harvard University in 1913. Tulane University conferred the degree of LL.D. upon him in 1889. William and Mary College in 1906, and Washington and Lee University in 1907. From 1875-93 Doctor Page practised law at Richmond, Va., devoting a considerable part of his time, however, to literary work. His first attempt in fiction was 'Marse Chan,' a negro dialect story first printed in *The Century* magazine in 1884 and incorporated, with 'Meh Lady' and other stories in the volume entitled 'In Ole Virginia' published in 1887. This was the beginning of a series of stories and books in which the author depicted with rare skill life in Virginia prior to the Civil War and during the reconstruction period that followed.

His published works include: 'In Ole Virginia' (1887); 'Two Little Confederates' (1888); 'On Newfound River' (1891-1906); 'The Old South' (1891); 'Among the Camps' 1891; 'Elsket and Other Stories' (1892); 'Befo' de War' (with Armistead C. Gordon); 'Pastime Stories' (1894); 'The Burial of the Guns' (1894); 'Unc' Edinburgh'; 'Meh Lady'; 'Marse Chan'; 'Polly'; 'Social Life in Old Virginia'; 'The Old Gentleman of the Black Stock' (1896, revised 1901); 'Two Prisoners' (1897); 'Red Rock' (1898); 'Santa Claus's Partner' (1899); 'A Captured Santa Clause' (1892); 'Gordon Keith' (1903); 'The Negro—The Southerner's Problem' (1904); 'Bred in

the Bone' (1905); 'The Coast of Bohemia' (Poems, 1906); 'Under the Crust' (1907); 'The Old Dominion—Her Making and Her Manners' (1908); 'Robert E. Lee, the Southerner' (1908); 'Tommy Trot's Visit to Santa Claus' (1908); 'John Marvel, Assistant' (1909); 'Robert E. Lee, Man and Soldier' (1912); 'The Land of the Spirit' (1913); 'Life of Thomas Jefferson' (in Italian, 1918); 'Italy and the World War' (1920); 'Dante and His Influence' (1922). Doctor Page was twice married. His first wife was Anne Seddon Bruce whom he married in 1886 and who died 22 Dec. 1888. His second wife was Mrs. Florence Lathrop Field, widow of Henry Field of Chicago, whom he married in 1893 and who died 6 June 1921. From 21 June 1913 to August 1919 Doctor Page served as Ambassador to Italy. He was a member of the American Academy of Arts and Letters, of the Metropolitan and Cosmos clubs of Washington, of the Westmoreland Club of Richmond, the Tavern Club of Boston, and the Authors, Century, and University clubs of New York.

PAINE COLLEGE, a colored Methodist coeducational institution, founded in 1883 and located at Augusta, Ga. It is financed by the Methodist Episcopal Church, South. Statistics for 1922-23 show a faculty of 18 members (4 white, 14 colored), 204 students, property valued at \$165,000 and an income of approximately \$32,000. Ray S. Tomlin was acting president in January 1923.

PAINTING AND SCULPTURE. Of all the tendencies that have been observed in these arts, the most important appear to be the movement away from eccentricity, away from subjects of astonishment, and the inclination toward good form. Even in that annual exhibition of the art of the vanguard, the Salon d'Automne, a Parisian censor perceived this change. One was, indeed, obliged to admit the presence of *faux*, but only in diminishing numbers (*L'Illustration*, 4 Nov. 1922) and already giving place to artists who adhere to approved traditions. Thus, while Van Dongen was showing 'Neptune' whimsically costumed, there were to be seen examples of better taste, as in G. d'Espagnat's 'Young Woman and Child,' in a portrait by Sorine, in Charles Guérin's 'Lady with Bracelets,' Ottman's portrait of Eve Francis, and Tinayre's 'Panochka,' carved in mahogany. Scarcely less important is a tendency or drift toward the æsthetic view of works of art, and away from that rather supercilious variety of expertising by which too often the public has been led to ascribe interest and value to a painting, for instance, merely because of the painter. (*Burlington Magazine*, 15 July 1922). At the Barbazanges Gallery, in Paris, there was an exposition of the art of Ireland. E. M. O'Rourke Dickev, Eva and Getitia Hamilton, Paul Henry and others being represented by landscapes; Sean Keating and I. B. Yeats by works uniting the study of landscape and that of popular types of inhabitants; Shannon, Sir John Lavery and Albert Power by portraits. Also in Paris there was held an unusually complete exposition of Japanese paintings. In New York and other American cities, exhibitions of

Gainsborough's 'Blue Boy' called attention to the power there may be in a single painting,—one not conceived in queerness and born into unpleasantness,—to win and hold such favor as the Post-Impressionist collections failed to secure. Summer exhibitions, again proving the healthful influence of out-door study, were those at Old Lyme (paintings by Everett L. Warner, George M. Bruestle, Clark G. Voorhees, Guy Wiggins, and sculpture by Mrs. Vonnoh), and at Goshen, Nyack and Nanuet, the works of the Nanuet painters who, earlier in the year, sent a "traveling exhibition" to Milwaukee, Muskegon, Saint Louis and Seymour, while planning a December exhibition of the group for New York City. The Newport Art Association's eleventh exhibition, 16 July-12 August, included the work of contemporary American painters and sculptors in many parts of the country.

The Metropolitan Museum of Art announced, in January, the donation of nine paintings by Mary Cassatt, a figure of Christ attributed to Andrea Solario, three landscapes by Gustave Courbet, a Dutch interior by Brekelenkam, and a stucco relief of the Madonna and Child by Donatello. A portrait of Mlle. de Gottignies, by Van Dyck, came as part of the Edmund C. Converse bequest. In the Abbott H. Thayer memorial exhibition, 20 March-30 April, 26 works were shown, illustrating that painter's achievement at widely separated periods of his career. A Thirteenth century French statue of exceptional interest was secured by purchase. The Dreicer collection was installed permanently in such a manner that visitors may study most conveniently the individual objects. An acquisition of very exceptional importance was Andrea del Sarto's painting (oil on wood) of the Holy Family, called the Borgherini Madonna, from the Murray collection at London. This panel, according to the *Bulletin* of the Museum for June, "was cleaned of the dense varnish with which it was covered, and now shows as an undoubted example of the latest and most powerful period of Andrea del Sarto's art." A summer exhibition at the Metropolitan Museum included water-colors by Sargent, Winslow Homer, Hassam, Dougherty and Marin.

The Hispanic Society of America opened, in the central building, upper galleries in which are shown: P. Ribera's 'Carmen'; by Ignacio Zuloaga, four examples; by H. Anlada-Camarasa, 'Girls of Burriana'; by A. La Gándara, 'Portrait of Madam Y'; by Sorolla, four examples; also admirable works by José Jiménez Aranda, Fortuny y Garbo, E. Sala y Francés, F. Domingo y Marqués, Madrazo y Kuntz, Madrazo y Agudo, E. Lucas, Rico y Ortega, A. de Beruete, R. Madrazo y Garreta, J. Pinazo, V. D. Bécquer and other painters.

The Boston Museum of Fine Arts received, as the gift of Mrs. E. F. Greene, a portrait of the Infanta Maria Theresa, by Velasquez,—that painting which Justi in his work on Velasquez had labelled incorrectly 'Mariana, the second wife of Philip IV.' A Homner portrait was the gift of Mrs. E. W. Longfellow. Ownership of the collection of Mr. and Mrs. H. H. Sherman,—chiefly paintings, including canvases by Italian masters of the 15th, 16th and 17th

centuries, together with works by living American artists and examples of the Spanish, Dutch and Flemish schools,—passed to the Museum of Fine Arts; the donors retaining, however, actual possession of the objects, except two of the paintings, for the present.

The Art Institute of Chicago, closing on 5 March the 26th annual exhibition by artists of Chicago and the vicinity, opened on 15 April the second international watercolor exhibition,—of which the declared purpose was “primarily to remove the prejudice which still lingers in the mind of the public with regard to watercolor painting and to illustrate the possibilities of this medium.” Thirteen nations were represented, including English, French, Hungarian, Scandinavian, American and Belgian groups. . . . Special exhibitions were arranged for the summer, and in this connection the *Bulletin* of the institute commented: “One finds the reaction toward the so-called academic in contemporary European art effectively illustrated by the exhibition of Alexandre Iacovleff. . . . Some of his fellow artists in Paris have resurrected Ingres for their leader.” . . . A valuable addition to the collections was the portrait of Conrad Zeller by Christoph Amberger. In important respects more interesting was the acquisition of Copley’s portrait of Brass Crosby, Lord Mayor of London. . . . At the 35th annual exhibition of American painting and sculpture, the Logan gold medal was awarded to Frank W. Benson; the Peabody prize to F. S. Chase; the Potter Palmer gold medal to John Singer Sargent, for a portrait of Mrs. Swinton; Peterson Purchase prizes to H. D. Murphy and J. E. Costigan; the Keith Spaulding prize to William Wendt; the Harris bronze medal to K. A. Buehr and silver medal to Eugene F. Savage; honorable mention in the department of sculpture to Ruth Sherwood and Janet Scudder; the Cahn prize to A. H. Krehbiel.

The Cleveland Museum of Art added to its collection two late gothic heads, assigned to the school of Michel Colombe, and a portrait by W. M. Chase, painted about 1882 or 1883. . . . A special exhibition of Renaissance art was held in Gallery II. . . . The fourth annual exhibition of works by Cleveland artists and craftsmen was opened to the public on 2 May, and we dwell upon this a moment, as upon an intimation of the kind of training that was given in places widely separated. Awards were made as follows: First, prize for landscape, to Frank N. Wilcox for his painting, ‘The Gravel Pit’; second prize to Clara L. Deike; third to Mary S. Collins; first prize for portraits, to Paul Travis; second, to Edith Stevenson; third, to W. J. Edmondson; first prize in miscellaneous class to H. G. Keller; second to Paul Shively; third, to Paul Travis; in decorative painting, first prize to H. G. Keller; second, to W. J. Edmondson; third, A. F. Biele; in the class of industrial painting, Frank N. Wilcox first; C. E. Gaertner, second; F. Craft, third; in water-colors, first to A. F. Biele; second to H. G. Keller, and third to H. H. Volck. . . . The second exhibition of contemporary American paintings was opened to the public on 8 June.

The Pennsylvania Academy of the Fine Arts held the 117th annual exhibition at Philadelphia,

5 February–26 March. The Temple gold medal was awarded to William L. Lathrop, the Walter Lippincott prize to Irving R. Wiles, the Mary Smith prize to Mary Townsend Mason, the Jennie Sessan gold medal to George Oberteuffer, the Carol H. Beck gold medal to Ellen Emmett Rand, the George D. Widener memorial gold medal to Beatrice Fenton. We mention also the paintings by Victor Higgins, Gari Melchers, Daniel Garber, Walter Ufer, E. W. Redfield, W. M. Paxton, Ralph McLellan, Robert Susan, C. F. Ryder, Juliet White Gross, E. A. Payne, G. Glen Newell, Elmer Schofield, Horace Brown, J. S. Sargent, Philip L. Hale; sculpture by Walker Hancock, J. M. Loré, Allan Clark, Margaret French Cresson, and Edith Barretto Parsons. The 30th annual exhibition of small oil paintings opened at the Art Club of Philadelphia on 21 October. The gold medal was awarded to Clifford Addams, with honorable mention of J. F. Folinsbee and R. Sloan Bredin.

The Carnegie Institute, Pittsburgh, held the 21st annual international exhibition of paintings, 27 April–15 June; at which the medal of the first class went to George W. Bellows and the medal of the third class to Henri Lebasque, with honorable mention of Charles Reiffel, Henry B. Snell, and Fred Wagner. It was announced in October that this institute at an early date in 1923, will “conduct an exhibition of paintings, sketches, and drawings by American artists” in such wise that meritorious new pictures may pass into the possession of people of moderate means.

The Buffalo Fine Arts Academy, Albright Art Gallery, in *Academy Notes*, announced the following accessions: Allen Tucker’s landscape, ‘The East Wind,’ Paul Sain’s, ‘Nenuphars,’ a bronze figure by Jeanne Poupelet, and William Kennedy’s, ‘Old English Village.’ There were exhibited eight caryatid figures, the last works of Augustus Saint Gaudens,—figures that, in a very special sense, harmonize with their architectural surroundings.

The Worcester Art Museum acquired Paul Gauguin’s ‘La Femme Accroupie,’ painted in Tahiti in 1891; also ‘Magdalene,’ painted by El Greco about 1590, and until recently in the Colegio de Ingleses in Valladolid.

At The Brooklyn Museum, a Benjamin West exhibition included, with famous portraits, a commendable showing of the less well-known historical and decorative works of that painter who so conspicuously was undefeated by his own versatility. . . . Modern English pictures (by Orpen, Frank Brangwyn, P. Wilson Steer, Augustus John, and many others) were on view in December.

West’s ‘Death of Hyacinthus’ and Doré’s ‘Scottish Highlands’ were presented to the Toledo Museum of Art. The donor was A. J. Secor, for many years that organization’s vice-president; and by gift from him the museum afterward obtained important canvases by masters of the Barbizon School and other French painters, together with examples of the art of Holland, England, and America.

The collection of The City Art Museum of Saint Louis was enriched by the acquisition of an important 16th century example by Jean Clouet,—a portrait of Guillaume Gouffier, Ad-

miral of France. . . . In the remodelled building of the Milwaukee Art Institute, there was an exhibition of the works of Wisconsin painters and sculptors. . . . The Detroit Institute of Arts, from 10 October to 12 November, showed a group of paintings and drawings by the Russian artist, A. E. Iacovleff. The annual exhibition for Michigan artists was held in December. . . . The Minneapolis Institute of Arts held its eighth annual exhibition of selected works by local artists from 29 September to 31 October.

At the National Academy of Design, New York City, the winter exhibition, 17 November-17 December, was memorable especially for light in landscapes or interiors (where objects are "caught," as Omar put it, "in a Noose of Light"), and for characterization in several portraits of persons who, decidedly, were not represented as too proud to fight and too humble to drink. . . . Edward W. Redfield, for his landscape, 'The Valley in Springtime,' received the Carnegie prize; Gertrude Fiske, for an otherwise unflattered nude, the Shaw Memorial prize; G. B. Troccoli the Proctor prize; Brenda Putnam, for her 'Sun Dial,' the Barnett prize in sculpture; Leon Kroll, for the rather sentimental 'Sleep,' the First Altman prize; Childe Hassam, for 'The Sun Room,' the Second Altman prize; Harriet W. Frishmuth, for her little bronze group, 'Fantasie,' the Watrous gold medal; Guy Wiggins, for 'The Quiet Valley,' the J. Francis Murphy Memorial prize. . . . In the center gallery, and a single field of view, this charming trio, 'Nymphs Surprised,' 'Morning Light,' 'Shadow Patterns,' by F. C. Jones, Marjorie Conant and Mildred B. Miller, respectively. In the same room, 'Self Portrait,' by George E. Harris; Charles S. Chapman's 'The Village Woods,' and Walter L. Palmer's 'Sparkling Brook.' In the Vanderbilt Gallery were Ipsen's portrait of Capt. Robert A. Bartlett; 'Reflected Light,' by Victor Higgins; a large, quiet Connecticut landscape by Robert H. Nisbet; Costigan's light-noosing of 'Cows in Cornfield'; Lever's 'Across the River Exe'; 'Snowy Banks,' by Gardner Symons; Ochtman's 'A Morning in Summer'; 'Evening Glow,' by S. L. Reckless; 'Mt. Aetna,' by Thalia Malcom; D. Carlsen's 'Delft and Brass'; 'The Vineyard,' by Karl Anderson; 'The Maumee River,' by Carlton T. Chapman; 'Overlooking Dover Plains,' by G. Glenn Newell, 'Aisles of the Forest,' by John F. Carlson, etc. In the South Gallery one painting merited name of best: W. Herbert Dunton's 'My Children,' unsentimental, but truly warm-hearted, and an admirable composition in two ovals,—one strong, including oval and one included, as though just thought of after the general plan had been settled. In the same gallery and the academy room, well-deserving sculpture also: Pollia's bust of George E. Giguère; the portrait of a Chinese, by Nathan D. Potter; Prince Katcho, by Gozo Kawamura; 'Polo Players,' by H. N. Moeller; 'American Bison,' by Eli Harvey; 'Desha,' by A. D. Lenz; 'Nancy Lee' and 'New Born,' by Gertrude K. Lathrop; 'Alexander Zilot,' by G. W. Derujinsky; 'The Surf,' by Chester Beach; 'Peary,' by M. M. Jacobs, and 'Col. John Caswell,' by H. P. Erskine.

MARRION WILCOX.

PALESTINE, an ancient state on the eastern shore of the Mediterranean for centuries under Turkish rule until its conquest in 1917-18 by British forces, now a state under British mandate with a civil administration under a British high commissioner. The natural and historic boundaries of Palestine run on the north from the desert on the east along the ridge of Mount Hermon to the Litani, east by the Great Desert, south by the desert of Sinai to the Gulf of Akaba and west the Mediterranean Sea. Its present political boundaries are on the west the Mediterranean; south the line running from just west of Rafa to the east of Taba at the head of the Gulf of Akaba; north the line established by the Franco-British Convention of 1920 running south of Ras-el-Nakura on the coast, midway between Acre and Tyre, east and northward to Metulla and, across the upper Jordan Valley to Banian, thence south to the east shore of Lake Huleh and down the left bank of the Jordan and the eastern shore of the Sea of Tiberias to Wady Samakh, thence, to El Hamme in Yarmuk Valley and thence the east bank of the river. The area under mandate to Britain is 9,000 square miles in extent with a population according to an announcement made 12 Jan. 1923 by the British colonial office of 753,412, divided as follows: Moslems, 589,564; Jews, 83,794; Christians, of various denominations, 73,026; Druses, 7,028. The following information is summarized from the report of High Commissioner Sir Herbert Samuel for the 18 months ending with December 1922.

Immigrants numbering 17,000, nearly all Jews, entered Palestine in that period, but emigration and the increased death rate due to post-war conditions prevented any noticeable increase in the Jewish population. The cost of government was completely defrayed by taxation, according to this account, which continues: "The Turkish system of taxation has been continued, with the objectionable features removed. The report states also that the Turkish tobacco monopoly held by the Regie Company had been abolished, with the subsequent lowering of prices. Yet the government has been enabled to increase its revenue. The cultivation of tobacco, mostly for local consumption, has begun, several cigarette factories being started in various parts of the country. The report also calls attention to the gradual reforms instituted in the financing of the municipalities. The police force is composed of 1,600 men, representing the various sections of the population. The standards of the police force are undergoing constant improvement, and a local gendarmerie has been created, which promises great efficiency. The cost of the British military garrison, which was £4,000,000 in 1921, was estimated to have been reduced to one-half for 1922, and there are hopes for considerable further reduction for 1923 and subsequent years. The administration has been responsible for the establishment of efficient law courts and magistracy, and marked improvement is noticeable in the sanitary conditions of the towns and in the health of the population. Vigorous campaigns against malaria and trachoma are being waged, and the water supply is improved. In the educational field the government is carrying out a program of primary schools for Arab children throughout the whole country.

During 1921 the government opened 75 such schools. A land survey of the whole country has been begun, and the registration of land ownership commenced. The land courts which had been established are aiding in clearing the existing confusion as to titles, the report declares.

"The whole of the railway system has been taken over by the administration and is being operated without loss. The public works department has engaged during the past two years in road construction, the main roads with few exceptions now being in good order. The post office pays its own way and is improving in efficiency, and the public telephone system which had been initiated by the British administration is developing rapidly. Passing to the measures taken by the government looking toward the fulfillment of the Jewish National Home program, the report states that in accordance with the policy of Lord Balfour's Zionist declaration, of which the full text is given, the Hebrew language had been granted official status and is being used by the administration, in which there is a considerable Jewish element. Jews have started a number of new industrial enterprises, and Jewish organizations have purchased considerable areas of land, care having been taken by the government that Arab cultivators who had claimed lands through previous occupation should experience no hardships. Otherwise, the report states, the government has not intervened in either the sale or purchase of land, which has been entirely free.

"A number of new factories, including a carpet factory employing 130 persons, a carpentry and cabinet makers' factory employing 63 persons, a small confectionery factory, a mother-of-pearl factory and two large hand cigarette factories, besides Jewish printing works with an Intertype plant were all started in Jerusalem by Jews in 1921. Only two important concessions were granted in 1921, both only provisionally and both to Pincus Rutenberg, the Jewish engineer, for the electrification of the country by using the waters of the Jordan. Special reference is made to the Zionist school system, in which 11,500 Jewish children of school age receive instruction, a system which includes 46 Froebelian, 62 elementary schools, 6 secondary schools and 10 technical schools. The Zionist schools are generally similar to corresponding schools in Europe, especially Switzerland. Hebrew is the language of instruction, and special emphasis is laid on Jewish literature, history and Jewish national subjects. The rest of the curriculum resembles that of schools in other countries, except in the orthodox schools, where another 5,500 children are instructed and where Hebrew is not the language of instruction. They are on a lower level than Zionist schools, according to the report. Special tribute is paid to the American Zionist Medical Unit, which is referred to in the report as the 'largest and best organized voluntary service.' Five thousand two hundred patients were cared for in hospitals in Jerusalem, Jaffa, Safed and Tiberias, in addition to 335,228 visits to clinics. The same unit conducts disinfection and sanitation activities and has taken measures to combat malaria in the Jewish colonies and labor camps. The government has recognized the authority of the Rab-

binical Office in Jerusalem, which is comprised of one Sephardic and one Askhenazic Chief Rabbi, six rabbinical councillors and two lay councillors. The largest transaction reported for the year was the purchase by the Jewish National Fund and Palestine Land Development Company of seven villages in the Galilee district, comprising 62,634 dunams, for which 226,040 Egyptian pounds had been paid. The rights of the existing tenants were safeguarded. State lands controlled by the government include 889,978 dunam (about 222,494 acres) cultivatable lands and 44,242 marshes, pasture, orchards and gardens, besides 340 houses, mills and other buildings. The government possess also 244 quarries and the waste lands, much of which is capable of productivity."

PAN-AMERICAN CONFERENCE. See PEACE AND ARBITRATION, INTERNATIONAL.

PAN-AMERICAN INTERNATIONAL CONFERENCE. See PEACE AND ARBITRATION, INTERNATIONAL.

PAN-AMERICAN UNION. See PEACE AND ARBITRATION, INTERNATIONAL.

PANAMA, a Latin-American republic of Central America and previous to 3 Nov. 1903, a department of the republic of Colombia. It has an area of 32,380 square miles; a total length of nearly 500 miles and a breadth varying from 37 to 110 miles. The population, according to the census of 1920, numbers 401,428, a medley of Spanish, Indian and negro elements. There are eight provinces. The capital, Panama City has 61,369 inhabitants. The largest city is Colon (40,886). Ports of minor importance on the Pacific are Montijo, Pedregal, Aguadulce, and Mutis. On the Atlantic are Bocas del Toro, Porto Bello, and Mandingo. Roman Catholicism is the prevailing religion. This church has 71 edifices served by 70 clergymen. There are some Protestants in the Canal Zone and there is full toleration for all denominations. Primary education is free and compulsory from the age of 7 to 15 years. There are 398 public schools with an enrollment of 22,000 children. There is a National University in the capital. There are several private schools of secondary grade. The finances of the republic have been reorganized by a fiscal agent of the United States. The budget for the two-year period 1921-23 balanced at \$13,672,995. The foreign debt of the state consists of bonds issued in the United States for public works to the value of \$2,500,000. The soil of the republic is very fertile, but only about five-eighths of the whole area is occupied and such cultivation as is carried on is according to old methods. Bananas form the principal crop. Other crops are rubber, coffee, cocoa, coconuts, copaiha, sarsaparilla and ipecacuanha. Sugar growing and cattle raising are increasing in importance. Pearl fishing is carried on and turtle shell is exported. Most of the common minerals are found except coal. In 1920 the exports of the republic were valued at \$3,648,210 and the imports at \$16,587,648. The chief exports were bananas, coconuts, balata, hides and gum. About 76 per cent of the total imports in 1920 came from the United States and about 90 per cent of the exports went to the United States. This was exclusive of canal ma-

terials which are duty free under a special agreement with the United States and are not included in the foreign trade summaries of the republic of Panama. Several lines of steamers maintain communications with both shores of the republic and with North America and Europe. The Panama Railroad crosses the isthmus from Colon to Panama and is owned by the United States government. The United Fruit Company has a line and branches in the province of Bocas del Toro with about 145 miles. New lines are projected and existing lines are being extended. There are 96 post offices and 37 telegraph offices in the republic. Good roads are under construction in several parts of the state. At the head of the government is a President elected for a term of four years and ineligible to succeed himself. There are three vice-presidents and a Cabinet of five ministers. There is a Governor at the head of each Province. The legislature consists of a Chamber of 33 deputies elected for four years, which meets biennially in September. The President of Panama in 1922 was Dr. Belisario Porras, who assumed the office 1 Oct. 1920.

History.—On 2 Jan. 1922 an earthquake caused a flood in Gatun Lake, Panama Canal. . . . The increase of traffic on the Canal lent force to the suggestion that another waterway should be constructed from ocean to ocean; and so there was an awakening of interest in the old Nicaragua Canal scheme (see 'Encyclopedia of Latin America,' articles 'Nicaragua Canal' and 'Nicaragua'). . . . Demonstrations were noted of more active interest, also, in the improvement of roads and of living conditions on the Isthmus. . . . On 3 March, at the memorial services for Brigadier-General Gorgas held in Birmingham, Ala., the diplomatic representative of Panama in the United States, Hon. J. E. Lefevre, paid tribute, in an eloquent address, to the great sanitarian,—the man who had made the Panama Canal possible. . . . On 28 August Dr. Ricardo J. Alfaro, as Envoy Extraordinary and Minister Plenipotentiary of Panama in the United States, presented his credentials at the White House. Dr. Alfaro was formerly legal adviser to the Legation of Panama, and he was the special envoy of his country at the inauguration of President Harding. He has held the ranking position in the Panaman Cabinet, that of Secretary of Government and Justice; has served as Professor of History in the Instituto Nacional, and is the author of the 'Life of General Tomás Herrán,' 'Boundaries between Panama and Costa Rica,' together with a number of valuable monographs.

PANAMA CANAL. Commercial traffic through the Panama Canal, during the calendar year 1922, exceeded that of any former year not only in the number of ships, ship tonnage, tons of cargo carried but also in the amount of tolls collected. Furthermore, the traffic in the last six months of the year likewise showed a decided increase over the traffic during the first six months of the year. An analysis of the traffic for the year 1922 shows that in the Atlantic to Pacific business there was an increase over the preceding year of 11 per cent in the number of transits, 15 per cent in tolls, 20 per cent in net

tonnage and 29 per cent in cargo tonnage. In the Pacific to Atlantic traffic there was an increase over the year 1921 of 3 per cent in the number of transits, 7 per cent in net tonnage, 8 per cent in tolls, and 27 per cent in cargo tonnage. Combined, the traffic showed an increase over 1921 of 8 per cent in the number of transits, 12 per cent in tolls, 14 per cent in net tonnage, and 28 per cent in cargo tonnage.

Compared with the first six months of the year 1922, the last half showed an increase of 21 per cent in transits, 26 per cent in tolls, 29 per cent in net tonnage, and 37 per cent in cargo tonnage. This increase, according to figures given by *The Canal Record* was particularly marked in the Pacific to Atlantic traffic, the last half of the year showing an increase over the first half of 32 per cent in transits, 43 per cent in net tonnage, 45 per cent in tolls, and 93 per cent in cargo tonnage.

Coastwise traffic between ports of the United States also continued to gain. In October, 1922, the last single month for which figures were available, shipments were the heaviest for any month since the opening of the canal. This traffic, in point of tonnage, tolls and tons of cargo carried, made up almost 30 per cent of the whole traffic through the canal in that month.

The Canal Record stated that many large shipments of fresh fruit are being dispatched from North Pacific Coast ports to Europe through the canal, practically all vessels in this service equipped with refrigerating plants being loaded to their capacity. What is reported as the largest single shipment of apples from any northern Pacific coast port was carried by the steamer *Narenta* of the Royal Mail Steam Packet Company, which passed through the canal on 19 December with 125,000 boxes of apples from Portland, Ore., to British ports. The *Narenta* carried a cargo of 4,854 tons, in which were 3,732 tons of fresh fruits and 640 tons of canned fruits.

A summary of the commercial traffic through the canal in 1922 compared with that of previous calendar years follows:

CALENDAR YEAR	No. of ships	Tolls	Tons of cargo
1914 *.....	350	\$1,508,737 56	1,758,625
1915 †.....	1,154	4,297,467 11	4,893,422
1916 †.....	1,217	3,671,162 68	4,774,822
1917.....	1,960	6,107,696 63	7,443,610
1918.....	2,070	6,313,455 39	7,284,159
1919.....	2,133	6,973,095 30	7,477,945
1920.....	2,814	10,295,862 21	11,236,119
1921.....	2,783	11,261,098 80	10,707,005
1922.....†	2,997	12,573,407 77	13,710,556

* Canal opened to traffic August 15, 1914.

† Canal closed approximately three months by slides.

According to the report of the Treasurer of the United States, the total amount expended on account of the Panama Canal proper up to the 30 June 1922 was \$477,128,265.95 while the tolls collected to that date amounted to \$59,346,188.74, as shown by the table on next page.

Deducting from total expenditures the total amount of tolls received shows the net expenditure upon the Canal up to the 30 June 1922 to have been \$417,782,077.21. Deducting from the latter amount the proceeds of bonds sold \$138,600,869.02, shows the amount expended upon the

PANAMA CANAL ZONE — PAPER AND PULP

Canal out of the general fund of the Treasury to have been, \$279,181,208.19. See also CANALS.

	Total amount expended	Receipts from tolls, etc.
1914 To 30 June.....	\$353,066,502 05	\$4,130,215 15
1915 Fiscal year.....	29,187,947 60	2,869,995 28
1916.....	17,504,728 07	6,150,668 59
1917.....	19,262,798 32	6,414,570 25
1918.....	20,787,624 92	6,777,046 55
1919.....	12,265,775 08	9,039,670 95
1920.....	6,031,463 79	11,914,361 32
1921.....	16,230,390 79	12,049,660 65
1922.....	2,791,035 40	
Total.....	\$477,128,265 95	\$59,346,188 74

PANAMA CANAL ZONE, a strip of territory ten miles wide, or five miles on either side of the centre line of the Panama Canal. Area, 441 square miles water included or with a land area of 332 square miles. Civil population on 30 June 1921, 23,757, of whom 8,158 were Americans. There are in the Zone 2,672 American women and 2,661 American children. Land owners have been ousted and the Zone is now a military reservation. The Governor of the Zone in 1922 was Colonel Jay J. Morrow, U. S. A., appointed to this post, 28 March 1921.

PAPER AND PULP. Since paper has come to be made almost wholly of wood, the manufacture of wood pulp and paper are regarded as a single industry. Some mills make pulp exclusively from either ground wood, or wood chemically treated with sulphite; other mills make both pulp and paper. The different grades and qualities of paper are commonly styled news print; standard news (which is simply news print conforming to the common standards of newspaper requirements); book papers, of better color, heavier weight, and often surfaced, for printing illustrations; paper board, bag paper, wrapping paper; fine paper, including a great variety of fancy and ornamental papers, and the heavily surfaced papers known as writing papers; tissue paper, hanging paper, boxboard, felt and building paper, and some minor classifications. Measured in short tons, paper board is now the largest product, news print and boxboard call for about equal quantities, then come book paper, wrapping paper and fine paper. Measured in square yards news print is far in the lead, involving the most work for the mills, and serving as a general standard by which other papers are gauged. For 20 years its production has increased almost uniformly, the exceptions being in 1917-18, when there was a 2 per cent reduction in output, and 1920-21, when there was a 15 per cent reduction. In other words, the paper trade experienced a slump, beginning in 1920 and extending into 1921. This was compensated for in 1922, when the production of all kinds of paper increased 31 per cent, on the average, the gain being greatest in bag paper (62 per cent), and least in news print (18 per cent).

Notwithstanding this return to almost the highest peak of production in 1922, the prices of paper reduced steadily during the two years 1921 and 1922. It is claimed that this was the natural reaction from the "boosting" of paper prices during the war, when consumers claim to have been unmercifully squeezed by the pro-

ducers. A shortage of paper invited higher prices, and for a long while there was no apparent stock or paper supply ahead of immediate needs. Even in the beginning of 1923, the stocks of paper on hand at the mills were singularly small, compared with stocks of other staple articles. The following table gives the production for the past two years, and the stock of paper at the mills:

PAPER PRODUCTION OF THE UNITED STATES IN SHORT TONS

Kind of Paper	1920	1921	1922	Stock at mill Dec. 31, 1922
Standard news...	1,308,000	1,131,000	1,342,000	17,000
Total news print (incl. standard)	1,512,000	1,226,000	1,448,000	19,000
Book paper.....	1,104,000	726,000	982,000	36,000
Paper board.....	2,313,000	1,665,000	2,154,000	55,000
Bag paper.....	312,000	131,000	212,000	3,795
Wrapping paper.....	832,000	652,000	836,000	65,000
Pine paper.....	389,000	242,000	361,000	37,000
Tissue paper.....	177,000	70,000	198,000	8,712
Hanging paper.....	114,000	70,000	92,000	2,835
Boxboard.....	1,378,000	1,122,000	1,571,000	25,000
Felt and building paper.....	367,000	286,000	420,000	8,112
Other grades.....	313,000	210,000	311,000	23,000
Total paper and paper board production.....	8,812,000	6,478,000	8,585,000	283,454

The consumption of news print during 1922 increased faster than the production, so that stocks were lower at the end than at the beginning of the year. The trend of prices is well illustrated by the course of news print, as purchased in the open market, during the past two years. The prices are per 100 pounds.

PRICES OF STANDARD NEWS PRINT IN OPEN MARKET

MONTH	1921	1922
January.....	\$6 94	\$3 68
February.....	6 28	3 58
March.....	5 62	3 60
April.....	5 21	3 55
May.....	5 06	3 55
June.....	5 13	3 47
July.....	5 01	3 55
August.....	5 16	3 64
September.....	4 18	3 66
October.....	4 07	3 79
November.....	4 17	3 83
December.....	3 67	3 87

Pulp wood production naturally follows closely the range of paper and paper board production. According to the United States Department of Commerce, 172 mills consumed 3,726,963 cords of pulp wood in 1922 against 3,196,846 cords consumed by them in 1921. The production of wood pulp by these mills in 1922 amounted to 2,437,530 tons as against 2,062,773 tons in 1921. These mills, it was stated, consumed nearly 70 per cent of the total quantity of pulp used in 1921, and produced about 72 per cent of the total.

The total exports of paper mill products from the United States in 1922 were valued at \$24,152,567, as against \$29,029,673 in 1921. This appears a falling off, but it is more than double the export of 1913—\$11,687,000. The imports of paper into the United States are trifling.

but a considerable quantity of pulp is made in Canadian mills and shipped here to be made into paper. The Canadian output of newsprint in 1922 was 1,082,000 short tons, a record, and 34 per cent gain over 1921. Because Canada has more wood than the United States her paper making industry is likely to grow faster than that of the latter country. Newfoundland also has begun making newsprint, turning out 60,000 tons in 1922, and Mexico has one small paper mill. Imports of paper into the United States in 1922 were valued at \$85,914,879 as compared with \$88,673,487 in 1921. Imports of newsprint in 1922 totaled 1,029,268 short tons valued at \$72,354,266 against 792,508 short tons valued at \$79,125,355 in 1921.

In all the world there are 2,825 paper mills, and their total production in 1920 was figured at 14,500,000 tons, from which it is apparent that the United States makes a little over half the world's paper. The International Paper Company, sometimes styled the paper trust, has no monopoly of the market, as is apparent from its production of 433,809 tons in 1922, 205,114 in 1921, and 532,000 in 1920.

The Government Printing Office in Washington buys its paper on submitted bids, and on 31 Jan. 1923, purchased a large lot, of which sample prices were \$4.03, \$4.35 and \$4.44 per 100 pounds for news in rolls. Public Printer George H. Carter thinks it is costing too much, and in his annual report urged the establishment of a Government mill of 50,000 tons capacity, at a cost of about \$1,000,000. He states that the Government Printing Office uses 137 square miles of paper annually, and that 27 cents of every dollar there spent goes for paper.

For some years there has been friction in paper-making circles over the validity of the Eibel patents involving an improvement in the wire arrangement of Fourdrinier machinery, generally adopted, and making for more rapid production. About one-third of the mills had refused to pay royalties, and were sued by the inventor, who early in 1923 won his case, establishing the validity of the patents.

There is a large and increasing manufacture of paper boxes and cartons, cards and envelopes, paper patterns, playing cards, etc., but no accurate figures of their progress have been collected since the Government census of 1919. In all, these minor industries give employment to about 160,000 people, or considerably more than the 114,000 engaged in the manufacture of paper and pulp.

PAPUA, Territory of, an Australian territorial possession on the southeastern part of the Island of New Guinea. Area, 90,540 square miles; population, Europeans, 1,096; Papuans about 250,000. The Territory is governed by an Executive Council of six official members and a legislative council of nine members. Revenue in 1921 amounted to £82,316; expenditures to £146,827; exports in 1921 were valued at £171,404; imports at £484,770. The territory produces copper, gold, tin, zinc, cinnabar, iron, manganese, sulphur, graphite, brown coal and petroleum. There is steamer connection between Sydney and the Territorial port of Port Moresby. There are five wireless stations. See **NEW GUINEA**.

PARAGUAY, a republic of South America lying between the rivers Paraguay and the Alto Parana has an area of 75,673 square miles and a population of 1,000,000, exclusive of about 50,000 Indians in the Chaco region. The region of the Chaco is in dispute between Bolivia and Paraguay. The population of Paraguay proper is predominantly Guarani Indian, with large numbers of the descendants of Europeans chiefly Spanish and also some negroes. In addition there are in the country about 60,000 foreigners, including 30,000 Argentines, 15,000 Italians, 7,000 Spaniards, 3,000 Germans and a sprinkling of French, English, Brazilians and other nationals. Asuncion, the capital, has a population of 99,836. Other large cities with their populations are: Villa Rica (26,000); Concepcion (15,000); Encarnacion (12,500); Luque (15,000); Carapegua (15,000); Paraguari (10,000); and Villa del Pilar (10,000). Roman Catholicism is the established faith of the inhabitants, but there is full freedom for all denominations. The civil ceremony alone gives validity to a marriage. Education is free and there is a compulsory attendance law but it is non-enforceable in many districts because of the lack of schools. The last school reports showed 1,268 primary schools with 78,399 pupils; 74 private schools with 4,021 pupils; national colleges at Asuncion, Villa Rica and Pilar with 740 students. There is a national university with 34 professors and 247 students and six normal schools with about 200 students.

Production.—With a subtropical climate considerably modified and made healthful by several mountain chains and an extensive hydrographic system, most of the products of the tropical and temperate zones are successfully cultivated. The extensive plain of the Gran Chaco affords excellent pasturage for cattle, and the slopes of the mountains of the country are covered with luxuriant forests, where many useful woods and medicinal plants are found. Beef products, the valuable quebracho wood, and yerba mate or Paraguay tea are the chief articles of export. Lapacho, curupaz, and cedar are valuable woods found in considerable quantities, and oranges, tobacco, coffee, rice, cotton, mandioca, and sugar are grown and exported. The beautiful nanduti lace is one of the products of native industry. There are about 30,000,000 acres of good grazing lands in the republic and 20,000,000 acres of timber lands. There are 5,249,000 head of cattle, 600,000 sheep, 500,000 horses, 61,000 swine and 90,000 goats. Paraguay tea is one of the chief articles of export. The cultivation of the tree from seed is being undertaken by German settlers over extensive tracts and is meeting with success. There are seven sugar refineries in the country. Indian corn, beans, rice and sweet potatoes are grown for home consumption.

Commerce.—The general world depression during 1921 was directly reflected in Paraguay and both imports and exports showed a marked decrease in 1921 from those of 1920. Imports that reached in 1919 a record figure of 15,835,970 Argentine gold pesos (\$0.96), declined to 13,118,504 pesos in 1920 and to 8,358,922 pesos in 1921—decrease of nearly 50 per cent in two years. Exports showed a decline from 14,816,117 gold pesos in 1919 and 14,959,175 in 1920

to 9,316,721 in 1921 — a decrease of about 40 per cent from those of 1920.

Importations from the United States showed a decrease of 54 per cent in 1921 as compared with 1920, dropping from a value of 3,129,556 gold pesos to 1,444,257 pesos and a decrease in the percentage of the total import trade of Paraguay from 24 per cent in 1920 to 17 per cent in 1921, which compared favorably, however, with only 6 per cent in the year 1913. While nearly all lines of goods showed decreases (the most notable being hardware, machinery, etc., from 1,790,234 to 377,242 gold pesos), a noteworthy increase appeared in the 1921 imports of textiles, which rose from a value of 375,494 to 599,932 gold pesos.

The following table shows the principal articles exported from Paraguay in 1920 and 1921:

ARTICLES	1920	1921]
Animal products:		
Cattle, live, number.....	17,990	6,614
Fat, kilos.....	23,482	102,548
Hair, bristles, kilos.....	89,350	69,847
Hides, cattle —		
Dry, number.....	46,671	51,739
Salted, number.....	152,294	139,154
Horns, kilos.....	195,299	51,395
Meat —		
Extract, kilos.....	23,223	
Jerked beef, kilos.....	1,023,673	803,592
Tinned, kilos.....	1,201,512	
Agricultural products:		
Bananas, bunches.....	7,510	3,808
Cigars, kilos.....	10,962	1,748
Matecup, number.....	2,122,550	1,755,839
Oranges —		
Common, number.....	131,890,000	171,761,100
Tangerine, number.....	1,470,500	4,561,600
Peanuts, kilos.....		150,590
Peanut bran, kilos.....	64,392	149,479
Sugar, kilos.....	508,877	9,360
Tobacco, kilos.....	8,601,722	7,159,455
Yerba —		
Ground, kilos.....	49,498	33,278
Leaf, kilos.....	4,711,422	4,562,990
Forest products:		
Coconuts, small, kilos.....	9,904	2,040
Coconut oil, kilos.....	23,120	9,055
Petit-grain extract, kilos.....	73,675	57,541
Quebracho extract, kilos.....	24,060,947	29,355,769
Wood —		
Logs —		
Quebracho, kilos.....	268,700	
Other, kilos.....	47,221,907	32,142,840
Posts —		
Fence, number.....	3,138,426	2,504,630
Other, number.....	60,281	50,125
Sawed, cubic metres.....	5,854	7,491
Timbers, number.....	63,314	57,353
Skins, wild animal, kilos.....	37,349	1,441

Shipping in 1921.—The Paraguay and Parana Rivers offer excellent water transportation facilities to a large part of Paraguay. Although more than 1,000 miles from Buenos Aires, large and comfortable river steamers operate a biweekly mail and passenger service between Buenos Aires and Asuncion, the up-river trip requiring four days and the down-river passage three days. There are other steamers connecting at Asuncion for the voyage on the upper Paraguay as far as Corumba, Brazil, while another line of smaller vessels makes the trip on the upper Parana to Posadas and on to Iguazu.

Asuncion is the only important river port of Paraguay and nearly all the export and import trade of the country passes through this city. The arrivals and departures of steam and sail-

ing vessels during 1921 are shown in the following table:

KINDS OF VESSELS	Entrances		Clearances	
	Number	Tons	Number	Tons
Steam vessels.....	1,660	192,683	1,690	185,408
Sailing vessels.....	1,352	117,710	1,395	119,600
Total.....	3,012	310,393	3,085	304,008

It will be noted that the number of Paraguayan vessels far exceeds the vessels of all other flags entering the port of Asuncion, while Argentine vessels exceed all other flags combined in the matter of tonnage. This is due to the regular schedule of the larger vessels plying between Buenos Aires and Asuncion, which fly the Argentine flag and which have a practical monopoly of the river traffic. This monopoly results in excessive freight charges and passenger fares, the freight at the present time from Buenos Aires to Asuncion on many articles being higher than the freight from European ports to Buenos Aires.

Railways and Railway Traffic.—With the exception of private, narrow-gauge, logging railroads, the only railway of Paraguay is the Paraguayan Central, which traverses the southeastern section from Asuncion to the city of Encarnacion, situated on the Upper Parana—the boundary between Paraguay and Argentina. Here a ferry across the Parana makes connection with the Argentine railways, thus permitting a through international service between the capitals of the two countries. A biweekly international mail and passenger service makes the trip either way in 54 hours.

This railway has a total main-track length of 274 miles, with 26 miles of sidetrack. On 30 June 1921, the rolling stock consisted of 477 freight cars, with a maximum individual capacity of 30,000 kilos; 46 passenger cars, including dining and sleeping cars; and 24 locomotives. The track is of standard gauge. The railway is owned by a corporation with its main offices in London. The local manager resides in Asuncion and the general shops are located at the town of Sapucay, Paraguay.

The receipts of the Paraguayan Central Railroad are reported as £232,873 for the fiscal year ended 30 June 1921, as compared with £257,998 in 1920, while operating expenses were £133,766 in 1921 and £152,044 in 1920. This shows an operating profit of £99,107 for 1921, compared with £105,953 in 1920. The outstanding capital shares and loans of the company as of 30 June 1921, amounted to £2,836,703.

Finance and Banking — Government Revenues.—In common with many other countries of the world Paraguay was beset during 1921 with financial difficulties, originating in the general world economic depression of the previous year, which culminated in the latter part of 1920 in the failure of two important Paraguayan banking institutions. A moratorium was granted the banks, providing for small payments to certain creditors and deferred payments for the greater part of their liabilities. Money was naturally very scarce during the year and several of the smaller commercial houses and a few of the more important concerns went into bankruptcy.

The Government revenues also suffered during 1921, owing to the great decrease in imports and exports, from which most of the receipts are derived in the form of import and export duties. The customs receipts for the calendar year 1921 amounted to 633,913 Argentine gold pesos and 41,304,198 Paraguayan paper pesos, compared with 997,631 Argentine gold pesos and 41,313,651 Paraguayan paper pesos in 1920.

Internal-revenue receipts on the other hand showed a slight increase over the 1920 figures, the amount for each of these years being much larger than any previous year.

Paraguay is peculiarly afflicted in the matter of currency and foreign exchange. The Paraguayan paper peso is nonconvertible paper, whose value rests fundamentally upon credits in Argentine gold. It has no foreign-exchange value except in terms of the Argentine gold or paper peso, in which currency all international transactions are negotiated at exchange rates that vary from day to day.

Government.—The legislative power is vested in a bicameral Congress, a Senate and Chamber of Deputies, the members of both being elected directly by the people. At present there are 20 Senators and 40 Deputies. The executive power is vested in a President elected for a term of four years, assisted by five ministers. For administrative purposes the republic is divided into 12 departments.

History.—Hemmed in by her stronger and more populous neighbors, Paraguay, though potentially one of the richest of the South American republics in natural resources has been hampered, since her birth as a nation, by unstable governments. The country has been in an almost constant state of unrest or political upheaval, which has retarded the increase of population, the exploitation of natural resources and the development of a general system of education to combat effectively the overwhelming illiteracy. In consequence the interior has remained largely pastoral. Shut in by her bigger neighbors, Paraguay has only two effective outlets, both of which are through foreign territory: by the Paraguay River into La Plata estuary, and over a native railway 232 miles long connecting with the national railway system of Argentina. This has helped to stifle the national aspirations for extended foreign trade with the nations of Europe and America, and has made Paraguay largely a feeding ground for the local towns just over her border. The long railway hauls across country to the ports and the fact that only vessels of comparatively light draught ascend the Paraguay River to Asuncion have handicapped Paraguay in the race for foreign commerce. This, in its turn, has tended to keep the national population down.

Paraguay has been attempting, since 1920, to place herself in the line of progressive, law-abiding nations; but the task has been difficult. Commerce and trade had to be rebuilt; public education had to be dragged out of the slough of despond; public confidence in the stability of the nation and the fitness of the Paraguayan people for self-government had to be restored; the national finances had to be placed upon a sound basis; and finally the professional, disturbing element had to be subjected to order or driven out of the country. This was the

aim of the Government inaugurated with Dr. Eusebio Ayala as President in 1920. The fight was an unequal one; but considerable progress was made. Friendly relations were established with the neighboring nations; steps were taken for the settlement of the national boundaries in dispute, especially with Bolivia; and efforts were made to solve the dominant national problem of an effective system of public education, primary and secondary, free and compulsory. As a result the attendance of students at the national university in Asuncion almost doubled between 1919 and 1923.

Paraguayan imports from the United States, which were 3,129,556 gold pesos in 1920, declined to 1,444,257 gold pesos in 1921 and declined further during 1922, owing to the entry of Great Britain and other European nations into the field following the close of the World War; and to the fact that the American exporters to Paraguay made no serious effort to retain the export trade which the war had thrown into their hands. Exports from Paraguay to the United States, however, remained practically the same in 1922 as in 1920 and 1921.

The expenditure of the Paraguayan government, which was about \$4,000,000 in 1922, was slightly more than the receipts, with a tendency to normality in 1923.

PARCEL POST. See POSTAL SERVICE, UNITED STATES.

PARK COLLEGE, a Presbyterian co-educational institution, founded in 1875 and located at Parkville, Mo. In 1922-23 it had a faculty of 23 members in the college and 5 in the academy, 366 students in the college and 99 in the academy, property valued at \$2,350,000 and an income of \$165,000. Frederick William Hawley, D.D., LL.D., is president.

PARKIN, George Robert, Canadian author and lecturer: b. Salisbury, New Brunswick, 8 Feb. 1846; d. London, England, 25 June 1922. He was principal of Upper Canada College, Toronto, from 1895 to 1902, after which he was organizing secretary of the Rhodes Scholarship Trust, residing in London. He spent a year visiting the universities and colleges of the United States and wrote articles about them. He lectured on Imperial Federation. His publications are: 'Imperial Federation' (1892); 'Round the Empire' (1892); 'The Great Dominion' (1895); 'Life and Letters of Edward Thring' (1898); 'Life of Sir John A. Macdonald, Prime Minister of Canada' (1906); and 'The Rhodes Scholarships' (1913).

PARKS, National. See NATIONAL PARKS AND MONUMENTS.

PARLATORIA DATE SCALE. See HORTICULTURE.

PATENTS. The report of Commissioner of Patents Thomas H. Robertson for the fiscal year 1921-22 shows that during that period there were filed in the United States Patent Office, Department of the Interior, a total of 113,597 applications for patents and registration of trade marks, labels and prints. The number of such applications filed during the three preceding years was: 107,656 in 1920-21; 102,940 in 1919-20, and 75,657 in 1918-19. Of the applications filed during 1921-22, 94,226 were for

patents; 17,029 for trade-mark registrations; 1,574 for label registrations, and 768 for the registration of prints. The patent applications are subdivided into 88,243 for inventions; 5,645 for designs, and 338 for patent reissues. During the year the office granted 38,083 patents on mechanical inventions; 258 reissue patents, and 2,862 design patents. It also registered 12,247 trade-marks, 1,560 labels and 541 prints. The number of applications awaiting action at the end of the year was 75,916, due, it was said, to the inadequacy of the office force to handle the tremendous increase in business. The number of amendments filed during the year was 167,014, the number of appeals on merit taken was 1,677, the number of petitions to the Commissioner was 3,242, the number of notices of opposition filed was 503 and the number of interferences declared was 2,260. The receipts of the office during the year amounted to \$2,894,286.58; disbursements to \$2,722,205.37, leaving a net surplus of \$172,081.21.

PATTEN, Simon Nelson, American university professor and author: b. Sandwich, Ill., 1 May 1852; d. Brown's Mills, N. J., 24 July 1922. Having attended Northwestern University for two years, he went to Germany in 1878 to continue his education at the University of Halle. From 1882-88 he served as principal of public schools in Illinois and Iowa, and was then appointed professor of political economy at the University of Pennsylvania, where he remained for 29 years. In 1905 he was awarded the degree of Doctor of Laws by the University of Illinois. He was well known as an author and lecturer in the field of economics and social science. He was a member of the American Academy of Political and Social Science and was president of the American Economic Association, 1908-09. He published 'Premises of Political Economy' (1885); 'Economic Basis of Protection' (1890); 'Theory of Dynamic Economics' (1892); 'Theory of Social Forces' (1896); 'Development of English Thought' (1899); 'Theory of Prosperity' (1902); 'Heredit and Social Progress' (1903); 'The New Basis of Civilization' (1907); 'Product and Climax' (1909); 'The Social Basis of Religion' (1911); 'Reconstruction of Economic Theory' (1912); and 'Culture and War' (1916).

PATTERSON, John Henry, American manufacturer: b. on a farm near Dayton, Ohio, 13 Dec. 1844; d. on board a train en route to Atlantic City as it was passing through Kirkwood, N. J., 7 May 1922. He was a son of Col. Jefferson Patterson and a grandson of Col. Robert Patterson, one of the original proprietors of Cincinnati, Ohio. As a boy he worked in his father's saw and grist mill; attended the public schools in Dayton, thereafter studied at Miami College, now Miami University, Oxford, Ohio, and in 1867 was graduated from Dartmouth College with the degree of A.B. From 1867-70 he was collector of tolls on the Miami Canal. He then engaged in the retail coal business at Dayton, later acquired an interest in coal mines in Jackson County, Ohio, and for several years was manager of the Southern Ohio Coal and Iron Company. In 1882 he became identified with the National Manufacturing Company of Dayton, Ohio, en-

gaged in the manufacture of a machine for the tabulation of sales as they were made and containing a receptacle for money. This was the beginning of the enormous industry developed by him. A year later he was made a director of the National Manufacturing Company, and in 1884 the National Cash Register Company, of which he was president and manager until a year before his death, was organized. His brother, Frank J. Patterson, was associated with him in this enterprise, as he had been in the Southern Ohio Coal and Iron Company. Mr. Patterson made the perfection and introduction of cash registers his life work. At the time of his death the plant of the National Cash Register Company at Dayton, Ohio, covered over 140 acres of ground and gave employment to over 5,400 persons. In addition to the factory employees, the sales force of the company numbered 7,500 people, and the annual output was approximately \$30,000,000. Mr. Patterson took an active interest in the welfare of his employees during his latter years, and for at least 10 years before his death was classed as a "model employer." During the Dayton flood, in 1913, Mr. Patterson spent money without stint in providing food and clothing for the flood sufferers, and erected a tent city in which to house them.

PEA APHIS. See ENTOMOLOGY, UNITED STATES BUREAU OF.

PEABODY, Mrs. George Foster, (Katrina Trask), American poet, playwright and philanthropist: b. Brooklyn, N. Y., 1857; d. Saratoga Springs, N. Y., 7 Jan. 1922. She was a daughter of George L. and Christina Cole Nichols. Her father was a direct descendant of Anneke Jans; her mother was a daughter of Jan Van Kool, who changed his name to John Cole after coming to America in the beginning of the 19th century. As Katherine Cole she married Spencer Trask, senior member of the New York banking firm of Spencer Trask and Company, 12 Nov. 1874. He was killed in a railroad accident 31 Dec. 1909, and on 6 Feb. 1921 she married George Foster Peabody, one of the executors of Mr. Trask's estate and a former treasurer of the Democratic National Committee. Several years prior to her second marriage, Mrs. Peabody announced that "Yaddo," her magnificent estate near Saratoga Springs, would, upon her death, be converted into a home for writers, musicians and other creative artists. Mrs. Peabody's philanthropies were so numerous that she came to be known as "the Beloved Lady of Yaddo." She published: 'Under King Constantine,' which, at the time of her death, had run into five editions; 'Sonnets and Lyrics' (1894, 1903); 'John Leighton, Jr.' (1898); 'Lessons in Love' (1900); 'Free, Not Bound' (1903); 'Night and Morning' (1906); 'Mors et Victoria' (1906); 'King Alfred's Jewel' (1908, third edition, 1909).—the last two were published anonymously; 'In the Vanguard' (a drama, 1913); 'The Mighty and The Lowly' (1915), and 'Without the Walls' (1919). On 15 Nov. 1922 the employees of the Trask estate presented to the city of Saratoga Springs a stairway erected in Congress Park in memory of Mrs. Peabody.

PEABODY, Josephine Preston. See MARKS, JOSEPHINE PRESTON PEABODY.

PEABODY MUSEUM OF ARCHAEOLOGY AND ETHNOLOGY OF HARVARD UNIVERSITY. The Peabody Museum added extensively to its collections during the year 1922, through explorations, by purchase, and by gifts. The greater part of the main hall of the first floor of the new section was supplied with exhibition cases, and several new collections were installed. The South American gallery was partially rearranged, and new material added. Two new house-group models of Northwest Coast Indians were prepared.

Field work in Middle America was carried on only incidentally. The expedition to Arizona continued its investigations of a group of remains first brought to light during the work of 1920-21. These appear to be of a people immediately succeeding the Basket-makers, or possibly they represent a modified or later culture of this people. Convincing evidences that these remains ante-date those of the Cliff-dwellers were found in a cave east of Marsh Pass, where Basket-maker structures and artifacts were encountered underlying Cliff-dweller structures and debris.

In addition to the excavations in this cave, a considerable range of country was explored, several new sites marked, and one Basket-maker burial cave discovered. From a burial in this cave an unusually fine atlatl or spear-thrower was taken, very similar to those used by the Mayas of northern Yucatan and the ancient Mexicans. A number of beautifully woven bags and baskets, and a variety of other artifacts were also secured.

A short expedition was sent among the Kwakiutl Indians of Vancouver Island for the purpose of securing ethnological material. Considerable collections were secured also from the tribes of southern Cameroon in West Africa, and a number of burial places of the New England Indians were investigated.

The Museum has issued three publications during the year, as follows: *Harvard African Studies*, Volume III; *Papers*, Volume VIII, Number 3, The Turner Group of Earthworks, Hamilton County, Ohio; *Papers*, Volume X, Tribes of Eastern Peru.

CHARLES C. WILLOUGHBY, A.M.,
Director.

PEACE AND ARBITRATION, International. During the year there were many organizations working in the interests of international peace. Among the special groups were the following: The Academy of Political and Social Science; l'Alliance Française; The American-Scandinavian Society; The China Society of America; The English Speaking Union; The Foreign Policy Association; The Italy-America Society; The Japan Society; The National Committee on American-Japanese Relations; The National Association for Constitutional Government.

Among the organizations devoting their attention more exclusively to the ways of peace between nations were the following: The American Association of International Conciliation; The American Group of the Interparliamentary Union; The American Peace Society;

American School Citizenship League; The American Union against Militarism; The Carnegie Endowment for International Peace; The Church Peace Union; The Committee on Educational Publicity in the Interests of World Peace; The Federal Council of the Churches of Christ in America; The Fellowship of Reconciliation; The General Committee on the Limitation of Armament; The Institute of International Education; The International Chamber of Commerce; The International Relations Clubs; The International Student Committee for the Limitation of Armament; The League of Nations Union; The American Association for International Co-operation; The National Council for the Reduction of Armaments; The Pan American Union; The Peace Associations of Friends in America; The Peace Association of Friends of Philadelphia; The Peace Committees of Various Church Federations; The Peace Committees of Various Yearly Meetings of Friends; The Society for the Abolition of War; The Women's International League for Peace and Freedom; The World Alliance for International Friendship Through the Churches; The World Peace Foundation.

The Carnegie Endowment for International Peace actively continued its work for the advancement of the cause of peace among nations and the proposal of peaceful settlements of international differences. An outstanding feature of the work of the division of intercourse in education was the continuation of aid in the reconstruction of the devastated portions of France, Belgium, Serbia and Russia. The division of Economics and History devoted its attention exclusively to the active preparation of the Economic and Social History of the World War, under the general editorship of Dr. James T. Shotwell. The division of International Law was largely occupied at the beginning of the year in assisting in the work connected with the Washington Conference on the Limitation of Armament and Pacific Problems. It also completed several large publication enterprises which had been in progress since 1918.

The American Association for International Conciliation continued its various lines of activity — including the encouragement of International Relations Clubs, a stimulation of prize essay contests and the distribution of its various publications on current international problems and treaties. The Inter-American Division continued to issue the *Inter-America*, in English and in Spanish. It also co-operated with the Department of State, The Smithsonian Institution and the Pan-American Union in the selection and appointment of delegates to the Twentieth International Congress of Americanists, which was held in Rio de Janeiro 20-30 August, prior to the celebration of the centenary of Brazilian independence. It has served as an intermediary in the application of funds received from the Carnegie Endowment to pay the expenses, wholly or in part, of five delegates to this Congress. The director of the division was one of the official delegates to the Congress and delivered a series of lectures in Uruguay and Argentina. This division also welcomed many visitors from Latin-America, including delegates to the Pan-American Conference of Women in

Baltimore and to the Tacna-Arica Conference in Washington.

The Institute of International Education with its five bureau divisions (Europe, Far East, Latin-America, Scholarships and Fellowships, International Relations Clubs) has continued its activities as heretofore. Among these were investigation of Chinese institutions, the exchange of fellowships with France, arrangement for tours of visiting professors of foreign countries, exchange of professorships, grants to professors on leave of absence, and various publications. The Institute co-operated with Italy-America Society in organizing a tour of students to Italy. Tours were also organized to France under the joint auspices of the Institute and the Federation de l'Alliance Française, to Scandinavia under the joint auspices of the Institute and the American-Scandinavia Foundation, and to Great Britain under the joint auspices of the Institute and the English-Speaking Union. The division of International Relations Clubs continued its publications, the most important being Syllabus XIII on "The Economic Situation in Europe" by Faith Moors Williams, a "Report on Education in China" by Paul Monroe, and "A Bibliography on the United States for Foreign Students" by D. S. Muzzey and others.

The Twentieth Conference of the Interparliamentary Union was held in the palace of the Federal Parliament, at Vienna, Austria, on 28-30 August. Its delegates represented 24 different nations. Its special aim is to unite in common action the members of all parliaments, constituted in national groups, in order to secure the co-operation of their respective States in the firm establishment and the democratic development of the work of international peace and co-operation between nations, by means of a universal organization of nations. Its object is also to study all questions of an international character suitable for settlement by parliamentary action.

During the year the American Peace Society continued its influence through the publication of the *Advocate of Peace* and in other ways. During the Washington Conference it circularized all the delegations with documents of the Society and co-operated with the Government in its investigations.

The American School Citizenship League, which has for one of its purposes co-operation with educational agencies in foreign countries for the promotion of international understanding, continued to encourage a serious study of world relationships through its World Essay Contest which is open to students of all countries. During the year the League conducted correspondence with about 40 countries concerning the contest. It distributed a large quantity of literature on various phases of international relations to assist speakers in preparing addresses.

The Church Peace Union, which was founded by Andrew Carnegie in 1914 to promote international friendship and good will through the churches, has published many pieces of literature dealing largely with the application of the Gospel to international relationships. It has furnished many speakers for addresses in pulpits and before associations of clergymen or church con-

ferences. It undertook a campaign in support of the treaties resulting from the Washington Conference on Limitation of Armaments. In August, it was responsible for an important conference which met at Copenhagen to discuss the problems of the world peace and at which representatives from the churches of 26 nations were present.

A similar organization, The World Alliance for Promoting International Friendship Through the Churches, created in 1914 by the action of the Church Peace Union and which is largely financed by the funds of the Carnegie Endowment, is an agency through which the Union works. The Church Peace Union is in active co-operation with several other organizations including the following: Federal Council of the Churches of Christ in America; The World Peace Foundation; The Mission Boards, and the Committee on Co-operation in Latin-America. It is also joined with other organizations in the study of Japan and the Far Eastern question and in the study of American Relations to Mexico. Believing that the best means of promoting friendship is through personal contact, it continues to send abroad delegations to visit the countries of Europe and the Orient.

The World Peace Foundation early in the year co-operated in securing support of the results of the Washington Conference. Throughout the remainder of the year it continued its educational work of supplying information and assistance to those interested in international questions. It especially expended much time and effort in distributing in the United States the publications of the League of Nations. It also associated itself with the Church Peace Union in securing support (especially among the churches) of an international program of co-operation, association and larger participation in the work of establishing international peace through world organization.

The League of Nations Union during the year produced the second Year Book of the League of Nations and also was active in forming the American Association for International Co-operation with a program of restoring American representation at the council table of the family of nations.

In November, the League to Enforce Peace, which has been rather inactive since the election in 1920, inaugurated a movement to consolidate all forces in favor of larger co-operation with Europe, believing that economic and other forces were operating to justify expectations of the success of such a movement.

The American Association for International Co-operation continued its program of education based upon the idea that the American government should resume its historical policies in favor of the settlement of international disputes by judicial methods in a world court and of co-operation with great international associations for the common welfare. It urged that the American government should accept invitations for representation on European international commissions for social welfare and reconstruction, declaring that it can co-operate fully in all these undertakings without assuming membership in the League of Nations. Late in the year it planned a national conference of friends

of international co-operation with a hope of crystalizing a nation-wide sentiment in favor of assuming obligations and responsibilities resulting from the position of the republic among the nations.

In December, the American Association for International Co-operation and the League of Nations Non-Partisan Committee voted to unite under the name "Non-Partisan Association for the League of Nations," with former Justice John H. Clarke of the United States Supreme Court, as president, with the hope that simplification of machinery and concentration of effort might "greatly accelerate the movement to place the United States in international affairs," as a member of the League of Nations upon terms consistent with the Constitution of the United States.

The Foreign Policy Association, which was formed in the spring of 1918 to encourage the study of important international questions affecting the United States and to communicate the results of such a study with a view to a better public understanding of foreign problems, has continued its program in favor of reduction of reparations, reduction of debts and reduction of armaments—which it regards as essential to the reconstruction of Europe. It urges co-operation with the League through its commission until a policy of full membership can be adopted. As a first step it urges the promotion of the unofficial American representative on the American Reparations Commission to full membership, claiming that the United States as the fifth member of the Commission would be the natural arbiter between the conflicting positions of the Allies. It insists that there can be no return of normal conditions in Europe or indeed in the world until the Russian people are again received into the family of nations. It has urged the recognition of President Obregon in Mexico, opposes armed intervention, and claims a share of credit for the gradual improvement of Mexican-American relations. Some of its most important work was done through stimulation of other groups. To co-ordinate the activities of the different groups interested in the Washington Conference it organized The National Council for Reduction of Armament, representing 32 branch organizations.

The National Council for the Reduction of Armaments during the year prepared a campaign textbook entitled "War on War" by Frederick J. Libby.

In November, after several years of study the International Chamber of Commerce, the American section of which has headquarters at Washington, completed plans for the establishment of a new international court of arbitration for the prompt and economical settlement or adjustment of commercial disputes between different countries—a court independent of all agencies established by Governments, administered from the headquarters of the International Chambers at Paris and composed of representative business men chosen from 28 nations, including the United States. The court appoints one arbitrator to try each case submitted to it, unless the parties concerned desire the appointment of two arbitrators and one umpire, or of three arbitrators. It also determines the country or town in which the arbitration shall be conducted.

Among the most important meetings of the year for discussion of international problems was the second session of the Institute of Politics at Williams College in August. Each of the four leaders of conferences on the rehabilitation of Europe presented constructive programs for alleviations of the European situation, including especially the economic adjustment of the German reparations problem, rectification of public finances, elimination of trade barriers and adjustment of the interallied debt problem. In a noteworthy address at the concluding session Dr. B. M. Anderson proposed that Great Britain and the United States as creditor nations, in consideration of economic reforms and settlements by the countries of continental Europe, should be willing to cancel all debts owed to them by the continental Allies. To part of this proposal, Oscar T. Crosby, as leader of the conference on interallied debts, raised a dissenting voice.

The Pan-American Union, the international organization of 21 American Republics, which maintains an office at Washington administered by a Director General and an Assistant Director, had many notable activities for the year 1922. The Section of Education rendered a variety of services to educational officials in Latin-American countries. It devoted much time to furthering the interchange of teachers and students between the Americas, and particularly to looking after the interests of Latin-American students in this country. It also distributed various publications and answered numerous inquiries concerning educational institutions and various modern social agencies, etc. The Counselor's office gave special attention to the development of Latin-American study among the women's clubs of the United States and also prepared press releases for distribution to the newspapers of the Americas. For commercial purposes the Union is in touch with government officials, commercial organizations, manufacturers, merchants, exporters and importers, and shipping interests, in both North and South America, doing all it can to facilitate the building up of trade among the American nations. Along general lines it is in touch with men in public life, editors, newspaper men, college presidents, professors, students, scientists and travelers, supplying information tending to increase interest in and knowledge of the twenty-one American nations. The Statistical Division published the annual review of the trade of Latin-America, and prepared articles on various phases of Latin-American commerce which were published in the *Bulletin*. During the year the Financial Section was established to keep in touch with the movement of capital in Latin-America and to Latin-America. The Columbus Memorial Library proved increasingly useful to members of the embassies and to students and authors. Special numbers of the *Bulletin* in Spanish and Portuguese editions devoted to subjects of common importance to the nations of the American continent were continued. The Union also proved useful in the preparation of programs for important Pan-American International Conferences held at Washington, Mexico, Rio de Janeiro and Buenos Aires, and also for an additional conference to meet at Santiago, Chile, in March, 1923.

Conducted in close co-operation with the work of the Union are the activities of the Inter-

national Sanitary Bureau, under the resolutions of the International Sanitary Conference, and including the publication of its *Bulletin Panamericano de Sanidad* which contains articles of interest to health officers in the countries of Latin-America.

A new plan for a "World Association of States," to be superimposed on the League of Nations and the Pan-American Union and designed to draw in nations not members of either, was submitted to the Institute of International Law at its meeting in Grenoble, France, 28 August 1922, by Professor Alejandro Alvarez of Chile. The plan was approved by the Twenty-seventh Commission of the Institute in executive session at Paris late in 1922. It assumes that the League of Nations is inadequate as a world power, and proposes to retain it purely as a European organization. The same principle applies to the Pan-American Union.

One of the most important and hopeful facts bearing on the work for peace during the year was the activity of the foreign offices of the world in efforts to settle disputes and to arrive at better understandings.

The Permanent Court of International Justice which was first definitely planned by Elihu Root and Dr. James Brown Scott and finally established by the League of Nations on 13 Dec. 1920 as its agency for settlements of disputes, was formally opened at The Hague on 15 June, rendered its first decision on 31 July and closed its first session on 10 August after settling two disputes. (John Bassett Moore was chosen as the American member.) On 2 August the Council of Ambassadors decided to submit the Kiel dispute to the Court for settlement.

Although America rejected the League of Nations Covenant, she continued to favor international arbitration as the surest road toward international understanding. Highly significant in this connection was the reopening of the British-American Claims Commission which under the treaty of August 1910 had only begun its work when the World War suddenly interrupted its activities. Even more significant was the agreement of June 1921 with Norway for arbitration of certain important claims arising from certain requisitions by the United States Shipping Board Emergency Fleet Corporation in the World War. Under the treaty each government appointed one arbitrator and the President of the Swiss Confederation named the third. Chandler P. Anderson was named by the United States and Paul Benjamin Vogt by Norway. This was the first important arbitration with direct bearing upon the war. Its importance was due not only to the amount of money involved but also to certain legal questions the decision of which was likely to establish significant precedents. In October, The Hague Court of Arbitration decided that the Norwegian ship-owners (Christoffer Hannevig and others) from whom vessels were requisitioned were entitled to \$14,000,000. Counsel for the United States stated that the Court had exceeded its authority and that its award was not in accord with the evidence. The State Department will determine whether the award will be accepted. If accepted the principle established will open the way for new claims aggregating \$75,000,000. In Febru-

ary 1923 Secretary Hughes sent a draft of \$12,239,852.47 in full for damages awarded, and thus supported the principle of arbitration, but at the same time dissented from the reasons expressed in the opinion of the majority of the tribunal and denied that the opinion could be regarded as authoritative or as a precedent.

On 31 Dec. 1921, the United States resumed relations with Germany by reception of Karl Lang as chargé d'affaires. On 10 August the two nations signed an agreement at Berlin for settlement of American war claims by a mixed commission composed of one member from each country and an umpire. This commission was fully organized for business by the close of the year. Its work was made easier by the readiness of the German government to adjudicate all meritorious claims and especially by its readiness to admit full liability for damages, both personal and property, arising from the sinking of the *Lusitania* by submarine craft—an admission which amounted to a plea of guilty to the commission of an unlawful act.

As a result of the Washington Conference a commission appointed to discuss amendments to the rules of war (under the terms of the Washington pact) began its sessions at The Hague on 11 Dec. 1922.

Several events of the year indicated the prospect of improved relations throughout the Western Hemisphere. In several ways the United States used its influence to promote international understanding. The American treaty with Colombia which undertook to settle all differences concerning Panama was ratified by Colombia on 24 Dec. 1921 and by the United States on 2 March 1922. It was proclaimed on 30 March. Mexico seemed to be returning to stable conditions and to a sense of international duty and responsibility. From a series of diplomatic discussions, under influence of the American government, emerged a plan for settling the long-standing Tacna-Arica dispute arising from the treaty of Ancon (of 1883) and involving Chile, Peru and Bolivia. On 17 January—following the failure of Chilean proposals to Peru for settlement by direct negotiation and by a plebiscite and the later agreement of Chile to arbitrate—Secretary Hughes invited the two countries to send representatives to Washington for a conference to arrange a settlement of questions arising from the treaty of Ancon. Chile accepted on 18 January and Peru on 19 January. On 15 May the Conference was begun. On 16 May Bolivia presented a plea for participation which both Chile and Peru on 22 May declined to consider. On 7 June Chile decided the arbitration must be limited to the method of the plebiscite and refused to arbitrate whether the plebiscite should be held. On 23 June, Secretary Hughes submitted a plan of arbitration which was accepted by both disputants. Peru did not wish a political arbitration, but desired a judicial solution of the problem through a competent technical body such as the United States Supreme Court or the Permanent Court of The Hague. She would have preferred to submit the dispute to the League of Nations if the United States had been a member of it. On 8 July, she proposed to Peru, in case of their failure to agree upon a settlement to submit the

dispute for a settlement through the good offices of the United States. This Chile accepted. On 20 July, the representatives of the two countries signed at Washington the Tacna-Arica arbitration protocol (and also a supplementary act on the plebiscite) referring the long standing territorial dispute to President Harding for final arbitration. This was regarded as a signal triumph for the principle of arbitration. The agreement to arbitrate was ratified by the Peruvian Congress on 13 September by a vote of 94 to 8. In Chile it produced considerable friction in the government, causing members of the cabinet to offer their resignation, which, however, President Alessandri refused to accept. Finally at noon on 15 January, following the ratification (by both countries) of the protocol (and also of the supplementary act submitting to arbitration the question of the plebiscite) ratifications were exchanged at the Pan-American Union at Washington. On 30 Jan. 1923 President Harding accepted the invitations of Chile and Peru to act as arbitrator.

On 20 September, Bolivia and Chile failed to agree on terms for revision of the treaty of 1904, Chile refusing to negotiate regarding a Pacific port for Bolivia.

During the year new steps were taken to improve the situation in Central America where an arrangement for a federation had been repudiated by Guatemala in December 1921 and had broken up on 2 February, on the eve of the expected birth of the proposed union. On 22 August following political troubles which threatened to result in war, an important meeting of the presidents of Nicaragua, Salvador and Honduras occurred on board the United States ship *Tacoma* in the Gulf of Fonseca in order to concert measures looking to the establishment of more peaceful relations in Central America. At this meeting these three presidents signed a renewal of the general treaty of peace and friendship of 1907—a treaty with the governments of Costa Rica and Guatemala later definitely recognized as still in force. A few weeks later, the American government, gratified at this action and believing that friendly relations could further be assured by exchange of views and recommendations, invited the governments of the five Central American republics to send their Plenipotentiaries to Washington for a conference on Central American affairs and proposed the negotiation of new treaties to insure permanent peace and co-operation among the Central American states, the adoption of effective measures for limitation of armaments in Central America, efforts to establish an international tribunal for the amicable adjustment of disputes which diplomacy might not be able to settle, and the consideration of other questions which might be unanimously discussed. All accepted promptly. At the conference which met on 4 December, they agreed on "Pan-American solidarity" but they split on the issue of federation which was proposed by Honduras as a subject of first consideration. The conference had not completed its work at the close of the year, but by 12 Jan. 1923, its subcommittees had agreed upon all points submitted in the American invitation. The conference adjourned 7 Feb. 1923 with 12 treaties and conventions, and three protocols to its credit.

Several Latin American arbitrations or arbitration treaties were completed during the year. On 7 Feb. 1922, under a treaty of 12 January, arrangements were made by Great Britain and Costa Rica to submit to Chief Justice Taft, for arbitration, differences arising over certain petroleum concessions to a British financial group. On 24 March 1922, the Federal Council of Switzerland submitted a report of 150 pages and rendered its award upon certain long pending boundary disputes between Colombia and Venezuela which earlier had been submitted to the crown of Spain by an arbitration treaty of 1881 and decided in 1891 but, because of failure to mark the frontiers, had not been eliminated. The Swiss decision was in favor of Colombia. On 16 January Colombia ratified a general arbitration treaty of 13 Nov. 1918 with Bolivia. On 15 February ratifications of a general arbitration treaty signed 18 July 1917, by Peru and Uruguay were exchanged. A general arbitration treaty between Spain and Uruguay signed at Madrid, 23 March, was approved by Uruguay on 15 June.

The program arranged for the fifth international ("Pan-American") conference of American states to be held at Chile in March 1923 included consideration of plans for co-operation in the improvement of all means of communication, measures tending toward closer association of the American republics for promotion of the general welfare and wider application of the judicial or arbitral settlement of their disputes, bases for limitation of military and naval expenditures and questions arising from encroachments from a non-American power.

In November, in connection with the preparation of the program, Uruguay proposed a Pan-American League of Nations and obligatory arbitration among the American republics, and Chile proposed a plan for reduction of armaments "in equal proportion" on the American continent. As substitutions Secretary Hughes proposed "a close association of American republics to promote mutual interests," a declaration favoring "judicial settlement" of all questions arising between the American republics, and reduction of armaments in a "just and convenient manner."

Canadian-American relations continued friendly. On 7 January the Great Lakes and Saint Lawrence ocean ship canal project was approved by the International Joint Commission in a report to the State Department at Washington and to Canada. On 17 May the United States Government notified Canada it would be glad to negotiate a treaty to deepen the Saint Lawrence waterway. On 12 July, Premier W. L. McKenzie King, of Canada, and G. P. Graham, Minister of Defense, proposed to Secretary Hughes at Washington to extend the Rush-Bagot agreement of 1817 by a permanent treaty for low armaments and border peace.

During the year 1922 several international conferences, together with a series of complicated and difficult negotiations expressed a renewed endeavor to secure better understanding and closer co-operation of governments which had co-operated to end the World War.

At the beginning of the year, the Washington Conference on Reduction of Armaments, a part of the great movement for adjustment

which began with the Armistice of November 1918, held the center of the international stage. Its open diplomacy attracted the attention of the world. Considering its net practical results as expressed in definite treaty agreements, it was successful beyond all expectations. It was founded upon the fact that all parties in interest were at peace and was especially marked by an Anglo-American accord which could be made the basis or nucleus of an association for wider regulation of maritime affairs and greater limitations of naval armaments. Perhaps its greatest triumph was the elimination of the Anglo-Japanese Alliance and the substitution of a four-power agreement which satisfied British and Japanese requirements "without exceeding the limits of the traditional foreign policy of the United States." It eliminated all apparent danger, and greatly reduced mutual misunderstandings and apprehensions which threatened to result in expensive naval rivalry if not in actual hostilities. It substituted the rule of reason for the rule of the sword. While the new international court was assuming its robes of dignity at The Hague, the Washington Conference was strengthening its hands by restating sound principles of the law of nations, and by providing for the appointment of a commission to consider and report upon the condition and requirements of international law affecting new agencies of warfare. On 6 February it closed with the signing of five treaties: (1) The Four-Power Pacific Treaty; (2) The Naval Limitation Treaty; (3) The Treaty Regulating Submarines and Poison Gas; (4) The Nine-Power Treaty Relating to International Policy toward China; (5) The Treaty Relating to Chinese Tariff Revision.

All were ratified by the American Senate by the close of March, following somewhat extended debates on the Four-Power treaty. In the April meeting of the American Society of International Law, Hon. Elihu Root said of the Four-Power treaty: "I doubt if any formal treaty ever accomplished so much by doing so little. It provided that we should all respect rights which we were bound to do already."

President Harding promptly stopped further naval construction and also fortification work at Guam and the Philippines.

Elihu Root in referring to the influence of the Conference later said: "The time has not yet come when international affairs are sufficiently settled to make immediately practicable a general conference to consider, clarify, extend and strengthen the law of nations, but it is already high time for those who believe in a world controlled by law to begin their preparation for such a conference, and the Washington Conference on Limitation of Armaments, as a by-product of its own special work, has contributed materially toward that preparation."

In December 1922, in his annual message to Congress, President Harding said: "The Four-Power pact, which abolishes every probability of war on the Pacific, has brought new confidence in a maintained peace, and I can well believe it might be made a model for like assurances wherever in the world any common interests are concerned."

Even before the close of the Washington Conference, the League of Nations (represent-

ing 51 nations) began work on an ingenious plan for a 50 per cent reduction of the armies of European countries exclusive of Russia. Early in July, its mixed Commission on the Reduction of Armaments at a Paris session in connection with Lord Cecil's plan for a collective guarantee considered also Rear Admiral Seagraves' proposal for extension of the Washington naval convention to all members of the League. On 7 September following the opening of the third session of the League of Nations Assembly, the Commission proposed the extension of the Washington treaty. Lord Robert Cecil, in presenting to the League Assembly a land disarmament proposal through regional agreements, stated that 24 European powers had refused to disarm because of fears of aggression. However, Britain reported a 55 per cent reduction of her navy, France 36 per cent, Italy 49 per cent and Japan 50 per cent. France, Poland, Japan, Sweden and Switzerland reduced their armies. The French army was reduced to 690,000 men. Poland demobilizing 1,000,000 retained only 260,000 men.

The League's Temporary Commission, appointed to consider and arrange reduction of national armaments, continued its work on proposals but under existing conditions (without wider co-operation) was unable to accomplish much.

On 2 December, the Moscow Conference on Limitation of Armaments in Eastern Europe was opened. The states represented were Soviet Russia, Poland, Finland, Latvia, Estonia and Lithuania. In opening the Conference the Soviet Commissary of Foreign Affairs followed the precedent set by Secretary Hughes, at the Washington Conference, by submitting a definite proposal which formed the basis of discussion.

Among the other prominent international conferences to consider world problems, were the Genoa Conference and the Lausanne Conference. Others of less prominence were held at Ghent, London and Paris.

INTERNATIONAL CONFERENCES OF EUROPE.

The Washington Conference was the preliminary to another prominent international conference dealing with larger issues and concerning more countries. Encouraged by the successful methods of the Washington Conference, the principal Allied governments reached a decision at Cannes to call a European economic conference at Genoa. The American government declined an invitation to participate, apparently regarding the conference as inter-European and as political rather than economic. This decision was one of immediate tactics rather than of fundamental policy.

The Genoa Conference which met on 10 April, primarily to consider the Russian economic situation, but also with hope for a 10-year European compact of non-aggression similar to the recent Pacific pact concluded at Washington following the conference for the reduction of armaments, absorbed the attention of all Europe, and of other countries also, for several weeks. It was another effort in the direction taken by President Wilson in the League of Nations — an effort to substitute a general system of international association for the older idea of alliances. It was planned to be a Pan-European assembly to agree upon adjustment as guaran-

tees of future peace. It proved, beyond all else, a battle between British and French necessities—between the opening of markets and provision for French financial and military security. Lloyd George brought reluctant France to Genoa by pledges that nothing but the economic reconstruction of Russia would be discussed. He went with a firm desire to promote disarmament of land forces. France, however, desired to postpone disarmament until the situation in Germany and Russia would warrant such a risk. The French view had the support of the new European states which by their location feared German or Russian attack. At the beginning of the Conference, Lloyd George promptly informed the Russian representative that Russia must recognize all her debts, assume liability for foreign property confiscated by the Soviets and abandon fantastic claims against the Allies. He soon received a sudden surprise which temporarily paralyzed his plans for peaceful adjustments. On 17 April the German and Russian representatives created consternation and anger among the Allies by concluding a two-party treaty cancelling indemnity claims and pre-war debts, restoring diplomatic relations and abrogating the Brest-Litovsk treaty and apparently threatening (by a Russo-German combination) to reverse the decision of the World War. The Allies promptly informed Germany that she must not participate in further conferences with Russia, and later gave notice of reserving the right to nullify any clause of the Russo-German treaty which might be found contrary to existing treaties.

Failing to reach an agreement with Russia, and finding that the Conference had reached a deadlock while Soviet Russia boldly dominated the situation, the powers which called the conference planned (by 15 May) to invite all governments represented at Genoa to meet at the Hague on 15 June to make another attempt to adjust the Russian economic situation. The American government was invited to join the new parley on Russia, but declined (15 May) mainly on the ground that the proposed conference seemed to be "a continuance, under a different nomenclature, of the Genoa Conference and destined to encounter the same difficulties." Secretary Hughes considered the Conference useless so long as Russia maintained the attitude of her note on 11 May to the Allies, repudiating national and international debts. The American Debt Commission, however, agreed to defer all important negotiations until the termination of the European Conference.

On 15 May the Genoa Conference ended. Its chief useful act was the arrangement of an eight-months' truce with Russia which probably prevented a Polish or Rumanian campaign for the year. In its effort to bring Russia back into the economic circle, it completely failed.

The cause of the Genoa failure was partly due to the suddenness with which the proposal was launched by Lloyd George after his talk with M. Briand at Cannes. But the larger, fundamental cause was deeper. It really appeared in the fact that between Russia and the Western nations there still existed a gulf which neither side was willing to see bridged by sweeping concessions. Russia stiffly refused to sacrifice her fundamental doctrine which rejected

the idea of property. The Western nations were equally unwilling to recognize the Russian communistic ideas. Lloyd George's situation as leader was also greatly weakened by the absence of the United States. In a speech in the House of Commons, after his return from Genoa, he asserted that the abstention of the United States had complicated the whole problem of reconstruction, contributed to the failure at Genoa, and handicapped disastrously the British policy of moderation.

On 15 June the allied delegations met at The Hague to discuss the economic situation in Europe—especially as related to Russia; but on 14 July they decided to have no further meetings with the Russians unless the Soviet representative wished to submit new proposals.

In the meantime, late in May, the question of German reparations became acute. The Reparations Commission fixed the sum at \$33,000,000,000 of which \$12,500,000,000 was to be delivered at once in two series of bonds. At first, Germany refused; but, tempted by conferences among international bankers, decided to withdraw her refusal to comply with the orders of the Reparations Commission and thereby relieved a very dangerous situation which threatened the peace. Early in 1922 she appealed to the Commission for a moratorium which was granted on condition that she reorganize her fiscal system. At first she refused to accede to the conditions, but, under threat of French action and with expectation of obtaining a large international loan, she surrendered and accepted the Commission's ultimatum which was to expire on 31 May. On 31 May 1922 the Reparations Commission, approving the German reply to its ultimatum, unanimously granted a provisional moratorium for 1922. On 12 July Germany requested a moratorium on indemnity payments for a term of three years.

All nations agreed that Germany must make to France such payments as were possible and lay aside the purpose of revenge and reconquest which continued to justify French fears of the future; but Britain and Italy while agreeing that Germany must admit her defeat and accept the consequences thereof especially recognized the vital importance of her recovery and liberality in the adoption of plans to that end provided a way could be devised to protect Germany's neighbors from German attack or to assure Germany's creditors against German default.

The problem of Allied debts to America was closely related to the question of reparations. Early in the year (9 February) Congress, in opposition to the wish of the President passed a bill creating a commission for refunding of foreign (Allied) debts, placing the interest at 4½ per cent—providing for their payment within a period of 25 years and prohibiting their cancellation. This action was regarded in Europe as a postponement of the settlement of the question of reparations and probably a postponement of the return of prosperity. Some hoped for cancellation of the Allied debts due America, although such cancellation would have involved the payment by American tax-payers of an additional \$685,000,000 annually for a period of 25 years. On 30 July, conferences were begun at Washington with a view to the

adjustment of the war debts of France and England. On 1 August Great Britain asked her Allies for payment of a part of their debts equal to what she would be required to pay America, although she preferred a general cancellation if America would join in the plan.

The Balfour note, issued on 1 August, a week before the beginning of the London Conference and addressed to all countries owing debts to Great Britain as a result of war loans, intimated that the United States, by its act of Congress 9 February, was standing in the way of any settlements by failing to cancel the indebtedness of the allied governments. It favored the complete elimination of all inter-allied debts by one general transaction, indicating that there could be no British cancellation of European debts without an American cancellation of British debts. It stated that Great Britain would cancel \$12,000,000,000 due her if America would cancel \$5,000,000,000 due America from Britain. American public sentiment did not seem to recognize any obligation to cancel and appeared rather indifferent to what was regarded as an attempt to stampede it into unreasonable prodigality, although many suggested that American cancellation might be necessary and expedient as a co-operative measure to prevent any collapse of Germany which might result in American disadvantage.

The London Conference of the Inter-allied Council, called to deal with the whole German problem closed on 14 August in disagreement on all points. It accomplished nothing on reparations reduction, nor war claims nor debt cancellation except to emphasize differences in viewpoint between the British and French premiers. It failed because the Balfour note of 1 August excluded the question of inter-allied debts. The whole problem returned to the hands of the Reparations Commission which had to act upon the German application for a moratorium in reparations payments—an application which was denied. British policy, determined largely by British economic necessities requiring the restoration of the German market and the stabilization of German currency, centered in efforts to reduce German reparations and remove French fears. French policy, which had started with the conception that Germany would not pay unless compelled by force, centered on demand for British cancellation of French debts as the first condition to French reduction of the German reparations.

Without some compromise there was apparently no chance that British trade would be restored or that France would receive any considerable reparation, and probably no European country except Great Britain would be able to pay its debts to the United States. Under such conditions, combined efforts to secure the call of a new international conference at Washington to consider reparations and allied debts and to bring peace to a troubled world were expected, and many recognized as the chief prerequisite of the success of such a conference the American cancellation of loans made to the Allies.

In December, at a conference of premiers representing the Allies, England submitted a proposal which granted Germany a moratorium

of several years and in substance would have materially reduced the amount of war indemnity required of Germany, but this proposal and also a compromise proposal offered by Italy was rejected by France and Belgium. Thereafter, under the terms of the treaty with Germany, France (with the aid of Belgium) claimed the right to take steps to force payment from Germany by occupation of rich German territory in order to collect the revenues.

The world situation seemed to grow worse and more threatening. Europe still sitting among her ruins was apparently helpless and almost hopeless. The oppressive menace of the situation found expression in Senator Borah's Senate resolution proposing that the President call a world conference to consider economic and disarmament problems with the hope of breaking the reparation deadlock.

By 15 December the fear of an impending European crisis resulting from final disagreement between the Allies on the question of the German indemnity awakened the American government to the seriousness of the situation and produced forecasts of a new economic conference in which America would participate—forecasts reflected in the American Congress in the proposal of Senator Borah which was intended to bring pressure upon the administration. Apparently Secretary Hughes, recognizing that the adjustment of the reparations question was fundamental to European revival and prosperity and to international peace, had already undertaken by diplomatic moves to exert an influence in the reparations negotiations and to intimate that the American government was willing to consider a plan whereby it might aid in the settlement of the reparations questions in the interest of the general economic situation in Europe; and in a public address on 28 December he recognized that the questions of German reparations are world problems which could not be disposed of by calling them European, and pointedly and significantly declared that the United States "would view with disfavor forcible measures which instead of producing reparations would threaten disaster." By 29 December the purpose of the American government to propose an international inquiry by financiers and economists to determine by a scientific survey the amount of money which Germany could pay seemed certain in case the allied premiers should fail—as eventually they did fail—to agree upon the settlement of the reparations issue at their Paris meeting of 2 Jan. 1923.

On the night of 30 December following the public announcement of Secretary Hughes' plan, the European governments after a month's conference at London prepared to make a last effort to settle their reparations problem at a Paris conference. Great Britain and other powers regarded with favor Secretary Hughes' suggestions but waited to hear from France, the nation which held the key to the whole reparations situation, and which was inclined to reject any plan which did not provide for forcing German payments. The main questions were in regard to whether an extension of the existing brief moratorium would be granted to Germany and upon what terms. France insisted upon seizing production resources as guarantees. The British

disapproved stern methods or penalties. Failure of the conference which had been generally predicted occurred within a week; and the French occupation of Essen,—the first phase of plans for seizure of the rich Ruhr region seemed certain.

At the close of the year there was no movement of greater promise than that of the American government in offering co-operation with Europe for purposes of honest reconstruction.

A new phase of the international problem of peace adjustment in the near East was presented by the military successes of the Turkish Nationals under Mustapha Kemal Pasha who, refusing to be bound by the unratified Treaty of Sevres, and ignoring the Sultan's government, had set up a government of their own at Angora in Asia Minor and had proceeded with a well equipped army to regain the territory lost as a result of the Sultan's defeat in the World War. A crisis was precipitated by their occupation of Smyrna on 9 September and the subsequent expulsion of the Greeks from Asia Minor and advance on the Dardanelles where they found British troops blocking their plans to regain possession of Thrace and the control of the straits. With the Turks back at the straits, all the old intrigue and maneuver of the past two centuries threatened to reappear. For a short time, their action and their demand for the restoration of Constantinople which had been placed under the joint control of England, France and Italy, threatened to result in war with the Allies; but following an armistice an agreement was finally made to hold a peace conference at Lausanne to settle the Near East problems which were not settled at the Paris Conference following the World War, nor by the treaties resulting therefrom.

The Near East Conference at Lausanne developed several surprises. Although a peace conference, it attracted wide attention as a great diplomatic battle between rival powers to determine the control of the Mediterranean and the Near East. It was as nearly representative of all the great world powers as any international conference had ever been. Turkey held the centre of the stage. Distant Japan had a seat, Russia was actively represented. The United States, officially a mere observer, was really an active participant. The only notable absentee was Germany. The conference opened on 20 November. Its "full members" were Great Britain, France, Italy, Turkey, Greece, Rumania, Japan and Yugoslavia. Representatives of Russia, Bulgaria, Georgia and Ukraina were present for discussion of matters affecting the Black Sea. The United States although it declined to participate in earlier conferences and although committed to non-interference in European affairs, was represented by two chief observers, Richard W. Child, Ambassador to Italy, and Joseph C. Grew, Minister to Switzerland, and by an "associate observer" Rear-Admiral Mark L. Bristol at the head of a staff of experts. The American government although it declined to assume responsibility for the "political and territorial adjustments to be effected," or to participate in the final negotiations, recognized its interests in Turkey and insisted upon the right to representation on all commissions and committees arranged by the conference and

the right to be heard both openly and in the secret sessions. Its representation was used as a lever by Turkish representatives in demanding the admission of Russian delegates who although present at Lausanne had not been invited to participate in the deliberations. Its observers played a conspicuous role which aroused both hope and fear of a larger American participation in European affairs. Ambassador Child, especially, stated definitely and forcefully, in Rooseveltian style, the American policy on points of controversy between the Western powers and the new Turkey which had replaced the deposed Sultan. He helped to clarify a real international issue—an issue vitally related to the problem of peace. On 25 November he boldly emphasized the American policy to protect its rights and to assure the open door in Turkey and Mesopotamia. On 1 December he declared America's agreement with the Allies against the abrogation of the Capitulations (concerning extra territorial concessions, etc.). On 6 December he declared in favor of the Allied doctrine of the open Straits (unrestricted access of all nations) between the Black Sea and the Aegean. He also announced America's agreement with Lord Curzon's statement in favor of guarantees of safety for Christian minorities in Turkey. Many thought that the logical consequences of such announcement of policy would be American co-operation in the maintenance of the policy and resumption of a larger participation at the council table of Europe. It was understood that the United States looked with favor on the proposition for an international trusteeship of the Straits by means of an international commission of control or some similar regime. It was suggested at Washington on 6 December that the attitude of the Turks, in making it clear that their national government would be disinclined to accept any sort of international supervision over the Straits in which the United States did not participate, might increase the likelihood of America's accepting membership in a Straits commission.

The conference was a succession of near understandings disrupted by new claims, new proposals or new positions which defeated agreement. By the Turks' continuous opposition to extraterritoriality (consular courts) and to proposals for insuring the freedom of the Straits, and their demand for Mosul which Great Britain could not consider, it was finally brought to a deadlock. The Turks' chief reliance was the division of the Allies and expectation that British public opinion would oppose a new war. The arrival of the Soviet Russian representative, M. Vorovsky, was followed by a series of developments which indicated that the conclusion of the peace conference might be followed by a Turko-Russian alliance. Early in December appeared the press rumors (probably exaggerated) that Germany had concluded a "secret military agreement with Russia" as part of an active plan for a war of revenge, mainly against France, and that the peace of the Near East was hanging in the balance (the pivot of which was the Russian support of Turkey). As the new year opened, although the conference was in a delicate situation, and its success or failure seemed to depend largely upon the developments of the reparations conference at Paris and the new democratic de-

bate in the Turk assembly at Angora, real progress was being made and the co-ordination committee was actively at work drafting a preliminary treaty which was expected to be signed within three weeks. Although war clouds ominously hung over various parts of Europe, leading statesmen stimulated by memories of the bitter experiences of the World war were determined to find peaceful adjustments of questions at issue and they felt encouraged by such incidents as the withdrawal of the Japanese from Shantung and the complete restoration of Chinese rule in Kiaochau (on 10 December).

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PEACH BORER. See ENTOMOLOGY,
UNITED STATES BUREAU OF.

PEACHES. According to the United States Department of Agriculture, the 1922 peach crop of the United States totaled 56,705,000 bushels against the 1921 crop of 32,602,000 bushels. California led in 1922 with a crop of 17,500,000 bushels. Georgia produced 4,900,000 bushels; New York, 3,400,000; Missouri, 2,300,000; Oklahoma, 2,070,000; Arkansas, 2,040,000. See also HORTICULTURE.

PEACHMOND. See HORTICULTURE.

PEANUTS. The 1922 peanut crop of the United States was estimated by the Department of Agriculture at 623,507,000 pounds compared with the 1921 crop of 829,307,000 pounds and the 1920 crop of 841,474,000 pounds. The decline in production was attributed to unfavorable weather conditions and to decreased acreage, the area for the three years being 986,000 in 1923; 1,214,000 in 1921, and 1,181,000 in 1920. The yields in the commercial sections of Virginia, Alabama, Georgia and Texas were especially light, that of the first mentioned State being rated at not more than 60 per cent of its normal. Shipments of crude peanut oil, exceeded 20,000,000 pounds. Texas and Arkansas, in 1922, shipped 23,000,000 pounds of Spanish peanuts, an increase of more than 50 per cent over their shipments for 1921. Imports of peanuts into the United States during the fiscal year ended 30 June 1922 totaled 10,803,221 pounds, compared with 47,989,230 pounds for the fiscal year 1920-21. Practically all of the imports came from China. Exports of peanuts during the fiscal year 1921-22 totaled 12,857,722 pounds, compared with 13,149,417 pounds in 1920-21. Imports of peanut oil during the fiscal year 1921-22, amounted to 2,878,076 pounds compared with 18,678,181 pounds in 1920-21. Most of this oil came from Hongkong, France and England. Exports of peanut oil in 1921-22 totaled 1,802,221 pounds compared with 1,594,643 pounds exported in 1920-21. An interesting development during the year was the collapse of the Peanut Growers' Exchange, Inc. of Norfolk, Va.—the so-called peanut trust—and its reorganization under the name of the Peanut Growers' Association. The production of peanuts in Japan during 1922 amounted to 13,228,000 pounds. The amount available for exportation was estimated at 6,614,000 pounds.

PEARS. The Department of Agriculture estimated the 1922 pear crop of the United

States at 17,772,000 bushels, an increase over the 1921 crop of about 7,000,000 and approximately 900,000 bushels in excess of the crop of 1920. With respect to commercial shipments, California, surpasses all other States, averaging around 4,400 cars annually—twice as many as New York and Washington ship. California, also, invariably leads in production while New York and Washington frequently alternate for second and third places. In 1922, California shipped approximately 6,000 carloads, thereby exceeding its average. New York shipped 5,000 cars while Washington dropped to 2,500 cars. Oregon and Michigan shipped 1,800 cars each. These five States supply approximately 90 per cent of all pear shipments. Production of pears in the leading producing States in 1922 was as follows: California, 5,000,000 bushels; New York, 2,883,000 bushels; Washington, 1,760,000 bushels; Oregon, 935,000 bushels; Michigan, 672,000 bushels; Pennsylvania, 576,000 bushels; Illinois, 510,000 bushels; New Jersey, 504,000 bushels; Missouri, 450,000 bushels; Ohio, 450,000 bushels, and Texas, 390,000 bushels. See also HORTICULTURE.

PECKHAM, William Clark, American physicist: b. S. Royalston, Mass., 13 Aug. 1841; d. Brooklyn, N. Y., 3 Oct. 1922. He served in the Civil War from 1861 to 1862 as a private in Company H of the 23d Massachusetts Regiment. He was graduated from Amherst College in 1867; studied at Union Theological Seminary 1871-72 and took the degree of A.M. at Amherst in 1873. From 1875-96 he was professor of mathematics and physics at Adelphi Academy, Brooklyn, and thereafter until his retirement a few months before his death was professor of physics at Adelphi College. For nearly 15 years he was a science lecturer in the Free Lectures for the People given by the Board of Education of New York City. After 1897 he was a member of the editorial staff of *The Scientific American*, contributing editor after 1921. A member of the G. A. R., he was commander of Ulysses S. Grant Post of Brooklyn in 1910, assistant adjutant general of the Department of New York in 1918 and adjutant general from 1921-22. He was a Fellow of the American Academy of Arts and Sciences, of the American Physical Society and of the Brooklyn Institute of Arts and Sciences.

PEEBLES, James Martin, American physician: b. Whittingham, Vt., 23 March 1822; d. Los Angeles, 15 Feb. 1922. After graduation at Oxford Academy, N. Y., in 1841, he studied medicine in the Pennsylvania University of Medicine and Surgery. For four years he was president of the California College of Science and for three years professor in the Eclectic Medical College, Cincinnati. He was also the owner and editor of several newspapers. He circumnavigated the globe five times and lectured in Oriental countries. He was a member of the Indian Peace Commission in 1868; United States consul to Trebizond, Turkey, in 1869; and represented the United States Arbitration League at the International Peace Commission of Europe, Paris. Dr. Peebles was a member of many hygienic, health and psychic research societies; was world missionary at large, from

the United States; was founder and president of Peebles College of Science and Philosophy (1914); of the California Centenarian Clubs (1915) and president of the California Humanitarian League (35 reform associations). He celebrated his 99th birthday, March 1921, and wanted less than 40 days of attaining his 100th year. He considered the chief cause of his long life was abstinence from eating animal flesh: "One cannot strengthen life by living on death." He said he preserved his faculties to the end, and his long white hair worn nearly to his shoulders gave him a venerable appearance. Before the Civil War he had served as pastor of the Universalist Church in Baltimore. Afterwards he became an Episcopalian and later a spiritualist and theosophist. Dr. Peebles's books are: 'Seers of the Ages' (1875); 'Immortality and Our Homes Hereafter' (1880); 'How to Live a Century and Grow Old Gracefully' (1884); 'The Demonism of the Ages' (1902); 'The Christ Question Settled' (1897); 'Vaccination—a Curse' (1905); 'The Spirit's Pathway' (1906); 'Five Journeys Around the World' (1907); 'Buddhism and Christianity Face to Face' (1909); 'Spirit Mates—Marriage and Divorce' (1909); 'Death Defeated' (1910), and 'How to Converse with the Dead' (1911). He also wrote many pamphlets on spiritualism and hygienic subjects.

PEKING UNION MEDICAL COLLEGE. See ROCKEFELLER FOUNDATION.

PENFIELD, Frederic Courtland, American diplomat: b. Haddam, Conn., 23 April 1855; d. New York, 19 June 1922. After graduation from Russell's Military School, New Haven, he studied in Germany and England, and for several years was on the editorial staff of the *Hartford Courant*. His diplomatic career began in 1885 and only ended when the United States entered the World War. He was first appointed vice-consul general at London, 1885; then became diplomatic agent and consul-general agent to Egypt with rank of Minister Resident, 1893-97; and in 1913 he was sent as Ambassador to Austria-Hungary by President Wilson. During the last three years of his residence in Vienna he assumed the diplomatic interests of Great Britain, France, Rumania, Italy and Japan. In the intervals of his diplomatic work he travelled widely in Africa, India, China and Japan. He was a Fellow of the Royal Geographical Society of London, an officer of the French Academy and given the "Palme Académique"; the Sultan of Turkey bestowed on him the Grand Cross of Order of Medjidieh; the Khedive of Egypt made him grand commander in the order of Osmanieh; Pope Pius X gave him the grand cross of Saint Gregory in 1911 (the first American to receive the highest class of this order); and France, the cross of the Legion d'Honneur, in 1904, in recognition "of prominence in discussing the relative merits of canal routes leading to the American government purchasing from a French company all the rights at Panama." Princeton gave him the honorary degree of A.M. in 1907; Hobart, LL.D. in 1914; New York University, and the University of Pennsylvania, LL.D. in 1917; the Catholic University E.H.D. in 1915, and New York Univer-

sity, LL.D. in 1922. He was a member of many clubs including the New York Yacht and the National Democratic Clubs. Mr. Penfield was the author of 'Present Day Egypt' (1899); 'East of Suez' (1907), and many reviews and articles on international subjects for the important magazines in England and America.

PENNSYLVANIA, one of the middle Atlantic States, popularly called the Keystone State, bounded north by Lake Erie and New York, east by New York and New Jersey, south by Delaware, Maryland and West Virginia, and west by Ohio and Lake Erie. Its area is 45,126 square miles and in 1920 it had a population of 8,720,017. The State is 32d in order of size and second in order of population. The population in 1920 included 8,432,726 whites, 284,568 negroes, 2,386 Asiatics and 437 Indians. The foreign-born population of the State in 1920 numbered 1,387,850, of whom 222,764 were Italians, 171,380 Hungarians, 161,124 Russians, 122,755 Austrians, 121,601 Irish, 120,194 Germans, and 90,666 English. The chief cities, with their populations in 1920 are: Philadelphia, 1,823,779; Pittsburgh, 588,343; Scranton, 137,783; Reading, 107,784; Erie, 93,372; Harrisburg, the capital, 75,917; Wilkes Barre, 73,833; Allentown, 73,502; Johnstown, 67,327; Altoona, 60,331; Chester, 58,030; Lancaster, 23,150; Bethlehem, 50,358; York, 47,512; McKeesport, 46,781; New Castle, 44,938; Williamsport, 36,198 and Easton, 33,813. In 1920, 36.7 per cent of the population was rural.

Religion.—The principal Christian denominations have an aggregate membership of 4,114,527, of whom 1,830,532 are Roman Catholics, 427,509 are Methodists, 371,674 Lutherans, 405,493 Presbyterians, 210,978 members of the Reformed Church, 194,262 Baptists, 118,687 Episcopalians and 16,444 Congregationalists.

Education.—Primary education is free and compulsory for all children between the ages of 8 and 14 for the full school term. In 1922 there were 44,862 teachers in the State public schools and 1,617,687 pupils. The State has 954 high schools with 7,160 teachers and 136,081 pupils, and 13 State normal schools with 370 professors and 3,042 students. For higher education the State maintains the Pennsylvania State College and an Agricultural Experiment Station in connection with it. Within the State the chief institutions of higher learning are the University of Pennsylvania, the University of Pittsburgh, Bucknell University, Duquesne University, Lincoln University, Temple University and Susquehanna University.

Finances.—On 1 Dec. 1921 the balance on hand amounted to \$8,172,617.12. Receipts during the ensuing fiscal year amounted to \$97,395,983.95. Disbursements for the same year amounted to \$94,315,790.57, leaving a balance on hand on 1 Dec. 1922, amounting to \$11,252,810.50. The bonded debt of the State in 1922 amounted to \$50,658,320.26. The assessed value of real property amounted to \$8,375,509,467, and of personal property, \$2,048,087,551.

Agriculture.—The census of 1920 gave \$500,000,000 as the value of all crops. The crops vary in different parts of the State, but agriculture, market gardening, fruit growing and horticulture are followed. The greatest agri-

cultural development is in the region around Reading, Lancaster and York, the famous Pennsylvania Dutch Region. The census of 1920 reported 202,250 farms with an aggregate area of 17,657,513 acres and including 11,847,719 acres of improved land. The total value of all farm property that year was \$1,729,353,000. The chief crops, with their acreage, yield and value for the year 1922 were: Corn, 1,573,000 acres, 69,212,000 bushels, \$49,833,000; spring wheat, 14,000 acres, 210,000 bushels, \$231,000; winter wheat, 1,364,000 acres, 25,234,000 bushels, \$27,757,000; barley, 12,000 acres, 306,000 bushels, \$199,000; clover seed, 18,000 acres, 25,000 bushels, \$250,000; oats, 1,213,000 acres, 41,242,000 bushels, \$19,796,000; buckwheat, 248,000 acres, 5,208,000 bushels, \$4,166,000; rye, 220,000 acres, 3,740,000 bushels, \$3,254,000; tame hay, 3,055,000 acres, 4,888,000 tons, \$69,898,000; potatoes, 264,000 acres, 28,512,000 bushels, \$21,384,000; sweet potatoes, 2,000 acres, 280,000 bushels, \$311,000; tobacco, 43,000 acres, 56,760,000 pounds, \$9,082,000; apples, 11,400,000 bushels; peaches, 1,560,000 bushels, and pears, 576,000 bushels. The wool clip in 1921 was 4,191,000 pounds. On 1 Jan. 1923 there were in the State 491,000 horses, valued at \$54,010,000; 55,000 mules, valued at \$6,875,000; 1,071,000 milk cows, valued at \$64,260,000; 506,000 other cattle, valued at \$14,674,000; 477,000 sheep, valued at \$3,387,000, and 1,200,000 swine valued at \$19,200,000.

Mineral Products.—Pennsylvania exceeds all other States in the value of its mineral products. This is in great part due to the State's leadership in the production of coal. Anthracite coal in 1922 was produced to the extent of 52,485,000 tons, and bituminous coal to the amount of 105,000,000 tons. The State also produces petroleum, natural gas, iron, etc. The petroleum output in 1922 was 7,443,000 barrels. In 1922, 776,000 gross tons of iron ore were mined and 780,000 tons of ore were shipped.

Manufactures.—The industries of Pennsylvania depend largely on its great basic minerals, coal and iron. Nearly half of the steel produced in the United States is made in Pennsylvania, whence it is shipped to all parts of the world. The production of pig iron in 1920 was nearly 14,000,000 tons. Pittsburgh is the greatest metal manufacturing centre on the globe. Electrical goods and equipment is another important industry of Pittsburgh. Other great industries are cotton goods, silks and woollens and leather. The State authorities report 26,077 industrial establishments, having 1,614,099 employees, of whom 1,101,500 were whites and 63,565 colored, 449,034 foreign born, 1,373,649 males and 240,450 females, 11,230 boys and 10,420 girls under 16 years of age. Wages paid to males totaled \$2,203,429,800, and to females, \$167,328,600. Capital invested aggregated \$5,799,515,800, while the value of the products aggregated \$11,086,748,300. The lumber industry was once of great importance, but of late years it has been greatly reduced. However, during the term of Gifford Pinchot as State Forester, a great reforestation movement was begun.

Communications.—Philadelphia is the principal port of the State and receives and ships goods to all parts of the world. The city was

the capital of the United States for 10 years. The foreign trade of the port is about \$500,000,000 yearly. Fifty-eight lines of steamships have regular sailings from Philadelphia and 20 lines occasional sailings. Nine coastwise lines make it a port of call and eight oil lines, while there are 12 lines of local and inland steamships calling there. The State has 12,872 miles of steam railways and 4,870 miles of electric railways. It has a port on the Great Lakes and the Ohio, Susquehanna, Delaware, Allegheny and Monongahela are important navigable waterways. There are 5,000 miles of improved State highways built at a cost of \$102,578,993.75.

Legal Holidays.—1 January; 12 February; 22 February; Good Friday; Memorial Day; 4 July; First Monday in September; 12 October; General Election Day; 11 November (Armistice Day); 25 December, and any day appointed or recommended by the Governor of the State or President of the United States as a day of thanksgiving, fast or prayer, or other religious observance.

Charities and Corrections.—The chief State institutions with their locations and number of inmates in 1912 were: Eastern State Penitentiary, Philadelphia, 1,606; Western State Penitentiary, Pittsburgh, 1,206; New Western State Penitentiary, Rock View, 490; Pennsylvania Industrial Reformatory, Huntingdon, 765; Pennsylvania Training School, Morgantown, 700; State Industrial Home for Women, Muncy, 75; State Institution for Feeble-Minded, Spring City, 1,200; State Institution for Feeble-Minded, Polk, 2,000; Pennsylvania Village for Feeble-Minded Women, Laurelton, 140; State Hospital for the Insane, Allentown, 1,323; State Hospital for the Insane, Danville, 1,676; State Hospital for Criminal Insane, Fairview, 594; Pennsylvania State Hospital, Harrisburg, 1,311; State Hospital for the Insane, Norristown, 3,178; State Hospital for the Insane, Warren, 1,718; State Hospital for the Chronic Insane, Wernersville, 1,101; Western State Hospital for the Insane, Torrance, 204, and Pennsylvania Soldiers' and Sailors' Home, Erie, 150.

Recent Political History.—On 9 January 1922 George Wharton Pepper of Philadelphia was appointed United States Senator to fill the vacancy caused by the death of Senator Boies Penrose. Mr. Pepper became a candidate in 1922 for the senatorial term ending 4 March 1927. On 8 Aug. 1922 David I. Reed of Pittsburgh was appointed United States Senator to fill the vacancy caused by the death of Senator William E. Crow, who had been appointed to the vacancy caused by the death of Senator P. C. Knox. In 1922 Senator Reed was a candidate for the unexpired term ending 4 March 1923 and for the full term of six years beginning on that date. Senators Pepper and Reed were elected on 7 Nov. 1922. At the same election Gifford Pinchot, the Republican candidate for governor, defeated John A. McSparren, the Democratic candidate for the same office.

Government.—The executive of the State is a Governor, who is elected for a term of four years and receives a salary of \$10,000. The legislative power is vested in the General Assembly, which consists of a Senate of 50 members, elected for four years and a House of Repre-

sentatives of 208 members, elected for two years. For local purposes the State is divided into counties, cities, boroughs and townships. There are 67 counties. Pennsylvania sends two Senators and 36 Representatives to the Federal Congress. The legislature meets biennially in January of odd years.

Officials.—(1922): Governor, William C. Sproul; Lieutenant-Governor, Edward E. Beidleman; Secretary of State, Bernard J. Myers; Attorney-General, George E. Alter; Auditor-General, Samuel S. Lewis; Treasurer, Charles A. Snyder, and Superintendent of Public Instruction, Thomas E. Finegan. The officials in 1923 are: Governor, Gifford Pinchot; Lieutenant-Governor, David J. Davis; Secretary of State, Clyde King; Attorney-General, George Woodruff; Auditor, Samuel S. Lewis; Treasurer, Chas. A. Snyder and Superintendent of Public Instruction, Thos. E. Finegan.

Judiciary.—Members of Supreme Court: Robert von Moschizker, Chief Justice; Robert S. Frazer, Emory A. Walline, Alexander Simpson, Jr., John W. Kephart, Sylvester B. Sadler and William I. Schaffer.

PENNSYLVANIA COLLEGE FOR WOMEN, a non-sectarian educational institution, founded in 1869 and located at Pittsburgh, Pa. In 1922-23 it had a faculty of 31 members, 221 students, and property valued at \$650,000. Income figures are not available. Dr. Cora Helen Coolidge is president.

PENNSYLVANIA STATE COLLEGE, a co-educational institution, founded in 1855 and located at State College, Pa. In 1922-23 it had a faculty of 631 members—320 in the teaching and administration departments, 311 in the research and extension divisions. Students enrolled during the collegiate year numbered 3,259, and in addition 2,688 attended the summer school during 1922. The institution's property is valued at \$3,088,999.69 and its income for 1922-23 was \$2,307,799.88. John M. Thomas, D.D., LL.D., is president.

PENNSYLVANIA, University of, a non-sectarian institution, coeducational in most departments, founded in 1740 and located at Philadelphia, Pa. In 1922-23 it had a faculty of 1,088 members, 13,577 students, property valued at \$12,008,239.15 and an income, consisting of tuition fees, State appropriations, etc., of \$4,062,202.19. Josiah H. Penniman, Ph.D., LL.D., is provost.

PENSIONS. According to the report of Commissioner of Pensions, Washington Gardner to the Secretary of the Interior, the number of pensioners on the roll of the United States Pension Bureau on 30 June 1922, the end of the fiscal year, was 547,016, a net loss of 19,037 from the total of 566,053 on the roll at the beginning of the year. The amount disbursed in the payment of pensions during the year was \$253,807,583, compared with \$258,720,821 disbursed during the preceding year. The amount appropriated for the payment of pensions during the fiscal year 1922 was \$265,000,000 as against \$279,000,000 for the fiscal year 1921. The number of Civil War soldiers on the roll was 218,775 on 30 June 1921, and 193,881 on 30 June 1922, a decrease of 24,894. The number of Civil War soldiers who died in 1922 was 25,082

as against 24,775 in 1921. The number of Civil War widows, minor children and dependents on the roll was 281,327 on 30 June 1921, compared with 272,194 on 30 June 1922, a decrease of 9,133. Deaths of Civil War widows, minor children and dependents in 1922 numbered 21,259 compared with 19,451 in 1921. The greatest number of Civil War soldiers ever on the pension roll was 745,822 in 1898; the greatest number of Civil War widows on the roll was 304,373 in 1912. Of the War of 1812 there were 49 widows surviving 30 June 1922; of the Mexican War there were 73 soldiers and 1,878 widows surviving 30 June 1922; of the Indian wars from 1817 to 1891, there were on the roll on 30 June 1922, 3,867 soldiers and 2,748 widows; of the War with Spain there were on the roll under the provisions of the general laws 14,445 soldiers and 3,283 widows, minor children and dependents; under the act of 16 July 1918, 5,915 widows and minor children; and under the act of 5 June 1920, 31,510 soldiers, making a total of 55,153. Spanish-American War pensioners on 30 June 1922. By classes the pension roll showed on 30 June 1922, 256,828 soldiers 282,965 widows, 2,106 minor children, 927 help less children, 4,100 dependents and 90 nurses. The names of 374 persons, on 30 June 1922, were on "the Army and Navy medal of honor roll" under the act of 27 April 1916 and receiving the special pension of \$10 a month for life allowed by that act. The unexpended balances of appropriations at the end of the fiscal year were:

For army and navy pensions.....	\$11,340,257 07
For fees and expenses of examining surgeons.....	172,836 39
For per diem and expenses of special examiners.....	4,270 12
For salaries.....	10,599 70
	<hr/>
	\$11,527,963 28

In 1922 there were 3,170 pensioners residing in foreign countries to whom pensions totaling \$1,319,231.39 were paid. During the fiscal year 1922 the amounts allowed as reimbursement for expenses of last sickness and burial of deceased pensioners totaled \$488,248.28; pension certificates issued on admitted claims numbered 64,967; applications of all kinds received and classified totaled 114,251 of which 47,710 were under the act of 1 May 1920 and 39,650 under the act of 5 June 1920. Claims disposed of during the year numbered 130,736 at an average cost of \$12.01 per claim. The average cost per claim disposed of in 1921 was \$17.33. Checks to the number of 2,269,767 were issued in payment of pensions in 1922 against 2,332,939 in 1921. Until 4 Sept. 1922 pensions were paid quarterly; since then payments have been made monthly.

Civil Service Retirement Law.—This law was enacted 22 May 1920, and provides for the retirement of employes in the classified civil service. An act of 17 June 1922 includes in the law certain classes of employes receiving less than \$600 a year and an executive order of 7 June 1922 brought within the purview of the law certain groups of unclassified laborers. At the beginning of the fiscal year 1921-22 there were 7,117 claims of all classes pending under the act of 22 May 1920; claims received during the year numbered 72,829; claims reopened numbered 694; claims disposed of numbered

75,734; claims pending 30 June 1922, 4,906. On 1 July 1921 the "civil service retirement and disability fund" amounted to \$9,672,842.03; the amount added to 30 June 1922 was \$14,853,748.99; disbursements totaled \$6,392,327.11, leaving a balance of \$18,134,263.91. The appropriation to cover the cost of administering this law was \$50,000; expenditures amounted to \$49,515. See also VETERANS' BUREAU, UNITED STATES.

PEPPER, Cayenne. See FOOD STANDARDS, FEDERAL.

PERMANENT COURT OF INTERNATIONAL JUSTICE. See PEACE AND ARBITRATION, INTERNATIONAL.

PERSIA, a state of southwestern Asia now a constitutional monarchy reaching from the Arabian Sea to the Caspian. The capital is Teheran. The area of Persia is about 628,000 square miles, but great portions of its territory are desert areas and the population is scant. The population is estimated at 10,000,000, but some authorities claim it is as high as 16,000,000. There are about 3,000,000 nomads, including 250,000 Arabs, 750,000 Turks, 700,000 Kurds, 225,000 Lurs, and 20,000 Gipsies. There are about 1,500 Europeans resident in Persia. Teheran has a population of 220,000; other cities are: Tabriz, 200,000; Isfahan, 85,000; Meshed and Kerman, each 80,000; Kermanshah and Shiraz, each 50,000; and Hamadan, Barfurush, Kazvin, Kum, Kashan, Resht, each with from 35,000 to 40,000. Nearly all of the inhabitants are of the Mohammedan faith and of the Shi'a sect. There are in the country 850,000 Sunnites, 10,000 Parsees, 50,000 Armenians, 40,000 Jews, and 30,000 Nestorian Christians. The national religion is well endowed and there are many priests or mollahs. The learned clerics are termed mujtahids or doctors of law and are independent of the Shah in their appointments. However, the high priest or Sheik, the chief judge, and the chief of the principal mosque of a city are appointed by the government. The Armenians have two bishops—at Tabriz and Isfahan. There is a Roman Catholic bishop at Isfahan of the Eastern rite and one of the Latin rite at Urumia. There is considerable toleration of the lesser sects in the cities but the Moslems of the lower castes sometimes oppress those of other faiths in regions where Europeans do not reside. In recent years many schools on European lines have been established but education is yet in a backward state. Reforms are in progress and female education has made a beginning. There are about 90 schools in all Persia as Westerners understand schools. There are, however, many colleges in which religion and literature are taught with a modicum of the sciences and also many special schools. Private tutors are common, being employed in every family having the means of doing so. In the capital there is a technical school with several European professors and also a French school supported by the Alliance Francaise. There are two military colleges and a political college to prepare candidates for the foreign service of the government. There are also several medical schools under the supervision of French doctors. The general aim of popular education in Persia appears to be to enable the masses to read the Koran.

Production.—Wheat, barley, rice, cotton, wool, silk, fruits, gums, and drugs are the chief products of the country. Opium is also produced. The wool is of excellent quality and Persian rugs and carpets are known all over the world. The country is relatively rich in minerals but its mines are undeveloped. Iron, copper, coal, borax, marble, lead, manganese, cobalt and nickel are among the minerals found. In recent years oil has been found in great quantities and the Persian fields have attracted the attention of foreign capital. There are rich turquoise mines which are worked in a primitive fashion.

Commerce.—In 1920-21 the value of Persian exports was £14,728,246 and of the imports £18,892,492. The table following shows the values of the chief imports and exports for the fiscal year 1920-21:

IMPORTS	
(Kran equals about 20 cents)	
	Krans
Cottons.....	219,273,000
Sugar.....	119,121,000
Tea.....	35,949,000
Rice.....	6,824,000
Yarns.....	18,257,000
Petroleum.....	11,739,000
Gold and silver coin.....	27,719,000
Copper and nickel.....	12,696,000
Animals.....	18,860,000
Haberdashery.....	10,051,000
Flour.....	5,543,000
Spices.....	5,840,000
Woolens.....	4,036,000
Tin, zinc and lead.....	3,719,000
EXPORTS	
Petroleum.....	180,778,000
Cottons.....	30,826,000
Fruits.....	29,939,000
Carpets.....	29,709,000
Opium.....	24,166,000
Rice.....	11,622,000
Gums.....	8,889,000
Wheat and barley.....	5,451,000
Gold and silver coin.....	5,177,000
Cotton.....	4,571,000
Tobacco.....	4,184,000
Skins.....	2,800,000
Drugs.....	2,553,000
Silk.....	1,954,000
Wool.....	1,408,000
Cocoons.....	1,226,000

In the year under consideration the British Empire had 53 per cent of the entire foreign trade. Russia was the second nation on the import list followed by Egypt, Turkey and Afghanistan in the order named. Egypt was first on the export list, taking more Persian goods than any other country, followed by the British Empire, Russia, Turkey and the United States in the order named.

Communications.—The total rail mileage of Persia is 350 miles. As yet there is no trunk line through the country, the lines for the most part being extensions of foreign lines across the frontier. There are great trade routes—the chief of these are the Western from the capital to Bagdad, from Julfa to Tabriz, from Astara to Ardebil, from Enzeli to Teheran, from Hamadan to Enzeli, from Bandar to Shahrud and from Askabad to Meshed, from Bandar Abbas to Kerman, from Bushire to Shiraz, from Bandar to Yazd, from Duzdab to Meshed, from Qum to Kashan, from Harun to Isfahan, and from Teheran to Qum. The Karum is navigable from the Gulf to Ahwaz.

Defense.—There was to be a uniform military force under the command of British officers according to the agreement of 1919, but the agreement not being ratified it lapsed in 1921 and all British officers and men were withdrawn. No systematic organization has since taken place. The navy has two boats used for customs purposes.

Government.—The ruling sovereign is called the Shah. In 1906 he consented to the establishment of a National Assembly or Mejlis. The latter drew up a constitution which the Shah approved. The assembly sat in 1909 and in 1915 and was reopened by the present Shah on 22 June 1921. The government is in the hands of a cabinet which as constituted on 21 Jan. 1922 was as follows: Premier and Minister of the Interior, Mushir-ed-Dowleh; Minister of Foreign Affairs, Hakim-ul-Mulk; Minister of War, The Sardar Sepah; Minister of Education, Mayer-ul-Mulk; Minister of Finance, Mudir-ul-Mulk; Minister of Justice, The Sardar Muazzam; Minister of Posts and Telegraphs, Ettela-es-Saltaneh; Minister of Public Works, Adib-es-Saltaneh. The reigning Shah in 1922 was Sultan Ahmad Shah, who succeeded his father 16 July 1909. The country is divided into 33 provinces, each under a governor-general who is directly responsible to the central government. Some of the local officials are elected by the citizens and practically all subjects have the right of suffrage.

History.—As the result of a protest lodged with the government by the labor office of the League of Nations an order was issued for the protection of the women and children working in the carpet factories of Persia. The order contemplates freedom of contract between employer and employee, the eight hour day, the prohibition of the employment of boys and girls under age of 10 years, a noon-hour rest period, sanitary working quarters, seats for women and children so as to permit working in normal posture, and the regulation of wages. For the first time in nearly 50 years Persia was defended by a purely Persian force with Persian officers because of the withdrawal of the British in 1921. The Bolsheviks also withdrew from Enzeli and Resht and Persia found herself free from foreign influence as regarded her armies. A rebellion of small proportions broke out in Tabriz but was speedily put down. The Shah visited Europe and during his absence anxiety was caused by the appearance of a Bolshevik war vessel in Persian waters. The Premier resigned 9 May and a new Cabinet was formed 19 June headed by Ghavan-es-Sultaneh. The Persian National Council selected the cabinet and the Shah telegraphed his approval from Europe. The improvement of economic conditions was the first concern of the new ministry which requested the United States to suggest the names of Americans to serve as financial and other advisers. The efficiency of the Shuster regime was recalled by the request for American experts. The United States supplied the names of 18 advisers. On 3 August it was announced that the National Council had approved the engagement of Dr. A. C. Mills-nough, an American, as Director-General of Finance for five years. He will draft the

budget and will be consulted in the matter of concessions. In the closing months of the year serious popular unrest developed from a series of causes. The empty treasury, with the slender prospect of adequate revenue collections, strife between the Minister of War and the National Council and Bolshevik agitation were among the causes of the unrest. Peace was made between the War Minister and the National Council when the former promised to cease from appropriating all revenues for his department and to place himself under the control of the Finance Minister. He also recalled the military governors placed in office by him except the governor at Tabriz where there appeared a necessity for such governorship. Despite these concessions a new crisis developed in the capital toward the beginning of November when a mob tried to force entrance to the government buildings but were driven off by the police. The arrival of two mullahs expelled from Bagdad by the British High Commissioner there was the cause of a huge anti-British demonstration at the mosque of Shah Abdul Azim near Teheran.

PERU, a Latin-American republic of South America, occupying the Pacific littoral of the continent between Chile and Ecuador. It has an area of 722,461 square miles with an estimated population of 4,620,201. Of the population, about 14 per cent are whites, 58 per cent Indian, 2 per cent negro and 25 per cent mestizos (cholos or Zambos), and the remainder Asiatic, mostly Chinese. Lima, the capital, has a population of 176,467. The other large cities of the republic, with their populations are: Callao, the port of Lima, 52,843; Arequipa, 40,000; Cuzco, 14,500; Ayacucho, 14,000; Iquitos, 12,000, and Hauras, 7,600. The republic is divided into 19 departments and three provinces.

Religion.—There is full and complete religious liberty. The Roman Catholic religion is the religion of the state. This church has an archbishop, 13 bishops, two vicars apostolic, and two prefectures apostolic. The churches and monasteries are the property of the state. In 1920, the sum of \$91,436 was voted for public worship and about \$4,000 for missions.

Education.—Primary education is free and compulsory between the ages of 7 and 14 years. There are in the republic 3,338 primary schools with 5,059 teachers and 194,701 pupils; 29 government high schools with 372 teachers and 6,669 pupils. Many of the secondary schools are vocational. For higher education there are the University de San Marcos, founded in 1551, with 1,308 students in 1920, the universities of Arequipa, Cuzco and Trujillo. There is also the newly founded University of Technical Schools (1921), for engineering, commerce, the industrial arts, and the training of teachers.

Production.—Agricultural products of Peru include cotton, sugar, coffee, wools, hides and skins and rice. Cotton production in 1919 amounted to 33,588 tons from 222,160 acres. The crop the following year and in 1921 and 1922 upheld this average. Difficulties of transportation in the tropical forest regions are retarding the development of the coffee-growing districts. The sugar industry is mostly along

the coast, where about 125,000 acres are devoted to cane cultivation. The annual production is about 300,000 tons. Cocoa growing is being extended, 200,000 trees having been planted recently in the Perene region. Wheat in 1919 was planted on 373,546 acres and the yield was 71,647 tons. Rice is extensively grown in the northern part of the republic, being planted to 72,555 acres, yielding 63,790 tons in 1919. There are at least 20 rice mills in the country. The country also produces tobacco, wines and spirits, olives and Indian corn. Sericulture is being tried out in the coast districts. There are several cocoa estates in the Department of La Libertad and cocaine is manufactured at Lima and many other cities. The country also produces cinchona and other medicinal plants. Alpaca, sheep and llama wool are exported. The mineral production in 1920 was as follows: Petroleum, 373,280 metric tons valued at £2,494,570; copper, 32,982 tons, value £2,358,243; silver, 286,043 kilos, value £1,853,221; vanadium ore, 9,700 tons, value £897,840; coal, 378,237 tons, value £276,988; gold, 1,952 kilos, value £265,972; lead, 562 tons, value £10,959; salt, 27,172 tons, value £21,655; tungsten ore, 69 tons, value £5,316; zinc, 22 kilos, value £94; bismuth, 7,820 kilos, value £6,882; borates, 261 tons, value £4,698; molybdenum ore, 2,415 tons, value £550, and antimony ore, 13 tons, value £109.

Commerce.—Imports for the year 1920 were valued at £17,956,758 and exports at £35,322,226. Sugar, cotton, copper, petroleum and wool were the chief items of the exports, sugar representing one-half of the total with cotton accounting for £11,190,061 and copper for £3,625,280 and petroleum £2,983,060. The United States took exports in 1920 to the value of £12,000,000. The total exports for the first six months of 1922 were valued at £7,929,220, the port of Talara leading with the majority of shipments. Imports for the same period were valued at £4,780,000. Of the total imports for the first six months the United States supplied 41 per cent; Great Britain 18 per cent and Germany 10 per cent. Total imports for the last six months of 1922 were valued at £5,800,000; exports during the same period had a value of £10,700,000. Of the imports for the last six months, the United States supplied 36 per cent, Great Britain 19 per cent, and Germany 12 per cent.

Finance.—In 1920 the revenue amounted to £8,087,297 and the expenditures to £7,481,303. The budget for the year 1922 provided for an expenditure of 6,000,000 Peruvian pounds. In 1922 a new budget law further regulating national expenditures was submitted to the Congress and the Federal government sought a foreign loan of \$50,000,000 from American bankers. The total debt of the republic at the beginning of 1922 amounted to £7,837,774. There is another foreign debt contracted by Peru for which the Peruvian Corporation has assumed responsibility in return for various concessions, such as rights over mines and lands and control of the state railways.

Defense.—There is universal and compulsory military service. The peace establishment of the army is 11,000, but there are in addition

about 8,000 police and gendarmerie and 176 state-aided rifle clubs under military control with 16,000 members. The navy consists of two cruisers, one light cruiser, one destroyer, and five submarines; also a river flotilla of seven vessels on the Amazon.

Communications.—There are in the republic 1,984 miles of railway, of which 1,385 miles are state lines at present under the control of the Peruvian Corporation. There are five main lines. There are about 500 miles of improved roads with many more contemplated. The posts, telegraphs, and wireless services are administered by the Marconi Company under a 25-year contract with the government from 1 May 1921. There are 19 wireless stations; 326 telegraph offices and 723 post offices.

Shipping.—The Peruvian merchant marine consists of 15 steamers of 14,248 tons and 37 sail vessels of 23,368 tons. The clearances at the port of Callao in 1920 numbered 740 vessels of 1,720,030 tons.

Government.—The executive power is vested in a President elected for five years and ineligible for immediate succession. There are two Vice-Presidents. The legislative power is vested in a Senate of 35 members and a Chamber of 110 members, both elected by direct vote. The personnel of both houses is renewed in toto every five years. The President in 1922 was Senor Augusto B. Leguia, who is elected for the term 1919-24.

History.—In June 1922 Peru created the National Bank of Peru, for the purpose of doing a general banking business for the government, for the nation and for the emission of national paper currency. The latter is guaranteed by taxes and certain government reserves. Peruvian currency based upon the libra, nominal value equal to the British pound, maintained a premium during the World War; but the general international slump in business following the close of the war affected Peru as it did the other South American countries. The issue of paper currency on the basis of one sol to fifty cents American money, or ten soles to the libra, caused a decline in the par value of the latter, which ranged around \$4.20 American money during 1922. But the abundance of circulation medium helped business which, slow at the beginning of the year, began to show signs of strong revival toward the end. New railway lines aided the exploitation of copper and iron; and the proximity of the latter to extensive coal beds promoted the steel industry thus compensating for business dullness in other directions. Fine wools, of which Peru makes a specialty, maintaining good prices, also helped business. Strenuous efforts were made during the year to extend and improve the Peruvian railway system. The Juancayo-Cuzco and Hoya-Amazon lines were nearing completion. It was decided to fill in the gaps necessary to complete Peru's part of the proposed Pan-American railway to which the above-mentioned lines contribute in part. Another railroad, from the northern Peruvian coast to navigation headquarters of the Marañon, was planned to complete through transportation from the Atlantic to the Pacific by way of the Amazon.

The government devoted the tobacco tax

valued at \$3,000,000 to the improvement and extension of the railways; and the Chimbote line, extended into the interior through this provision, has greatly helped mining. Certain other moneys were also devoted to the extension and improvement of the national railways. At the close of 1922 the Peruvian government had entered into arrangements with foreign capitalists for the extension and improvement of her Pacific ports with a view to facilitating the expansion of trans-Pacific and long distance coast trade. Steps were taken, during 1922, to reorganize and increase the effectiveness of the national army and the police, both urban and rural. Two French generals who had made records for themselves during the world war were engaged by the government. General Pellegrin was made Inspector General with very extensive powers and head of the National Military School; while General Clement was given charge of the reorganization of the army. Experienced Spanish officers were entrusted with the reconstruction of the police organization; and more especially of that of the rurales or rural guards, along the same lines as the famous Spanish rural police. These Spanish officers also founded a modern police-training school. Special attention was given to public instruction; the number of government schools and colleges were increased and those in existence were improved. Two treaties were arranged in 1922, one with Colombia and the other with Ecuador, with the object of defining the boundaries between the Peruvian national territory and that of each of the countries mentioned. Efforts were made to settle the long-standing difference between Peru and Chile over the possession of the three provinces, Tarata, Tacna and Arica, lying to the south of Peru. The ambassadors of Chile and Peru considered the question in detail and resolved to ask the United States to arbitrate the matter. The latter requested the interested parties to meet in Washington, where a provisional agreement was entered into which, it was hoped, would pave the way to a final settlement.

PETROLEUM. The year 1922 in the petroleum industry was characterized by record high production and by almost record imports. In the crude petroleum field this record production and

the large imports resulted in the already large accumulation of stocks being increased to the highest quantity on record. Another result was observed in unsettled and low prices of crude oil. The above table summarizes the statistics of the crude petroleum industry in the United States for the years 1921 and 1922.

During the period 1918-22 production increased 55 per cent; imports, 229 per cent; exports, 109 per cent; consumption, 42 per cent; and stocks, 106 per cent. More than 23,000,000 barrels of crude petroleum were withdrawn from storage in 1918, whereas in the following four years stocks were increased, more than 62,000,000 barrels being added to storage in 1921 and almost 79,000,000 barrels in 1922. On 31 Dec. 1922, net pipe-line and tank-farm stocks of domestic petroleum plus stocks of Mexican petroleum held in the United States by importers amounted to 264,578,000 barrels, a supply sufficient to meet current needs of consumption for 143 days. It is of interest to compare these figures with those for stocks of crude oil held on 31 Dec. 1915, at the time of oversupply consequent to the development of the Cushing field, when stocks amounted to 194,185,000 barrels. On account of the small consumption at that time, however, the supply was sufficient to last 244 days.

Preliminary figures show that 551,197,000 barrels of petroleum were transported from producing properties during 1922. To these figures, which were compiled from monthly reports of pipe-line and other companies to the United States Geological Survey, will be added to constitute final figures of production (when the annual canvass of some 14,000 producers is completed) the quantity of petroleum consumed on the leases for fuel and the net increase during the year of stocks held on producing properties. The production for 1922 was by far the greatest quantity of petroleum ever produced in the United States in any one year, exceeding the production of 1921 by almost 17 per cent, more than doubling the production of the country in 1914, and approximating the entire production in the world in 1919. The increased production for the year was due chiefly to the bringing in of prolific new fields in California, Oklahoma, Texas, Louisiana, and Arkansas. Among the more important recently developed pools that contributed to the increased production of 1922 are Long Beach, Santa Fe Springs, and Huntington Beach in California; Burbank, Bristow, and Tonkawa in Oklahoma; Mexia, Kosse, Currie, South Electra, Bunker, Pioneer, and Mirando in Texas; Maynesville and Bellevue in Louisiana; and El Dorado and Smackover in Arkansas. Increased development of the Salt Creek pool, Wyoming, the bringing in of a number of small new pools, the extension of old ones, results of more efficient methods of development in all the fields, and last but not least the sustained production of approximately 275,000 wells throughout the country contributed to the total production for the year. The new production came from about 17,400 new wells reported to have been completed during 1922.

Regarding world production of petroleum in 1922 preliminary estimates indicated a total not far from 850,000,000 barrels as compared with 765,000,000 barrels produced in 1921.

(IN THOUSANDS OF BARRELS OF 42 U. S. GALLONS)

	1921	1922
Production.....	472,184	551,197
Imports.....	125,364	124,340
	<u>597,547</u>	<u>675,537</u>
Consumption.....	526,032	586,359
Exports.....	8,940	10,223
Added to stocks.....	62,575	78,955
	<u>597,547</u>	<u>675,537</u>
Pipe-line, tank-farm, and producers' stocks, plus stocks of Mexican petroleum held in the United States by importers 31 Dec. 1922.....	190,762	*264,578
World production.....	765,065	†850,000
Percentage of world production produced in the United States.....	62	.....
Percentage of world production consumed in the United States.....	69	.....

* Not including producers' stocks except in California
† Estimated.

The following table shows the world production of petroleum by countries for 1921, complete returns for 1922 not being available.

COUNTRY	Production, 1921	
	Barrels of 42 U. S. gallons	Percentage of total by volume
United States.....	472,183,000	61.7
Mexico.....	193,397,587	25.3
Russia.....	29,150,000	3.8
Dutch East Indies.....	16,958,105	2.2
Persia.....	16,672,540	2.2
Rumania.....	8,368,000	1.1
India.....	8,000,000	1.0
Poland (Galicia).....	5,167,000	.7
Peru.....	3,699,280	.5
Japan and Taiwan (Formosa).....	2,447,000	.3
Trinidad.....	2,354,000	.3
Argentina.....	1,747,410	.2
Venezuela.....	1,433,000	.2
British Borneo (Sarawak).....	1,411,000	.2
Egypt.....	1,255,000	
France (Alsace).....	392,000	
Germany.....	200,000	
Canada.....	190,338	.3
Italy.....	34,400	
Algeria.....	2,688	
England.....	2,652	
Other.....		
	<u>765,065,000</u>	<u>100.0</u>

Indicated consumption of domestic and imported crude petroleum (deliveries to consumers), amounting to 586,000,000 barrels in 1922, was 35,000,000 barrels greater than domestic production. The difference was made up by imports, which, however, amounted to 124,000,000 barrels. Imports of Mexican petroleum during the first half of the year were maintained at record high amounts but fell off considerably during the last half of the year, following the depletion of the prolific southern fields of Mexico.

The year 1922 opened with prices of crude petroleum at the high point of the upward reaction which began in the summer of 1921, following the drastic drop during the first half of 1921, when the price of Oklahoma-Kansas grade crude oil fell from \$3.50 to \$1 a barrel within a period of a few months. In January, 1922, the price of Oklahoma-Kansas grade crude oil was \$2 a barrel, which price was maintained until the middle of July, when it dropped to \$1.50 a barrel, and in August the price was cut to \$1.25 a barrel. In November prices of Mid-Continent crude oil were put on a gravity basis, but the \$1.25 (maintained for oil having a range in specific gravity between 33 and 34.9 degrees) remained unchanged until the end of the year. Relations of monthly fluctuations in price of Oklahoma-Kansas grade crude oil, the wholesale price supply (production plus imports plus stocks at the beginning of the month), and demand (consumption plus exports) are shown in the foregoing diagram.

The year closed with a distinct change in conditions that had persisted for more than two years. Beginning in November and being more pronounced in December, total pipe-line and tank-farm stocks of domestic petroleum plus stocks of Mexican petroleum held in the United States by importers, which month by month had been accumulating since May, 1920, registered a decrease due to the fact that production plus imports was less than consumption plus exports.

Petroleum Production by Fields.—The fol-

lowing table shows the production of the large United States oil fields for the years 1921 and 1922:

FIELD	1922	1921
Appalachian.....	29,204,000	30,451,000
Lima-Indiana.....	2,256,000	2,404,000
Illinois and West Indiana.....	10,211,000	10,934,000
Mid-Continent.....	305,789,000	258,461,000
Gulf Coast.....	35,368,000	36,371,000
Rocky Mountain.....	28,698,000	20,950,000
California.....	139,671,000	112,600,000
Other.....		12,000
Total.....	<u>551,197,000</u>	<u>472,183,000</u>

Production by States.—The following figures compiled from company reports made to the United States Geological Survey show the quantity of petroleum transported from producing properties in 1922. Petroleum consumed on the leases and produced but not transported from the producing properties is not included.

	Jan.-Dec.
Arkansas.....	12,097,000
California *.....	139,671,000
Colorado.....	97,000
Illinois.....	9,363,000
Indiana: Southwestern.....	848,000
Northeastern.....	236,000
Total Indiana.....	1,084,000
Kansas.....	31,588,000
Kentucky.....	8,981,200
Louisiana: Northern.....	32,608,000
Gulf Coast.....	1,563,000
Total Louisiana.....	34,171,000
Montana.....	2,369,000
New York.....	1,000,000
Ohio: Central and Eastern.....	4,742,000
Northwestern.....	2,020,000
Total Ohio.....	6,762,000
Oklahoma: Osage county.....	38,216,000
Remainder of State.....	108,415,000
Total Oklahoma.....	146,631,000
Pennsylvania.....	7,443,000
Tennessee.....	9,800
Texas: Gulf Coast.....	33,805,000
Remainder of State.....	82,865,000
Total Texas.....	116,670,000
West Virginia.....	7,028,000
Wyoming: Salt Creek.....	18,896,000
Remainder of State.....	7,336,000
Total Wyoming.....	26,232,000
United States.....	<u>551,197,000</u>

*Part estimated.

Stocks.—Stocks of crude petroleum are classified as follows: Producers' stocks—petroleum held on the producing properties (lease storage); pipe-line and tank-farm stocks, petroleum that has been removed from the producing properties but not delivered to refineries or to other consumers and is held on tank farms, in tanks along pipe lines, and in the lines; refinery stocks and stocks held by other consumers—petroleum that has been delivered to refineries or to other consumers. Pipe-line and tank-farm stocks constitute by far the greater part of the petroleum held in storage in the United States. For the States east of California such stocks are reported monthly to the Geological Survey as

gross stocks, including the total contents of tanks and pipe lines, and as net stocks, which are gross stocks minus B—S—and water. Stocks for California, prior to August 1922, are those published in the Standard Oil Bulletin; since July, stocks for California are those compiled by the Pacific Coast office of the American Petroleum Institute and include producers', pipe-line and tank-farm stocks (see note below).

STOCKS OF PETROLEUM ON LAST DAY OF YEAR
(Barrels)

SOURCE BY FIELDS		31 Dec. 1922
A. Domestic petroleum: Pipe-line and tank-farm stocks east of California:		
Gross.....		214,319,000
Net.....		199,038,000
California†.....		49,375,000
B. Mexican petroleum held in the United States by importers:		
At Atlantic coast stations:		
Crude.....		6,028,000
Topped oil topped in Mexico.....		2,642,000
At Gulf coast stations:		
Crude.....		6,059,000
Topped oil topped in Mexico.....		1,436,000
Total Mexican.....		16,165,000
Total domestic net pipe-line and tank-farm stocks east of California, California stocks as defined above, and stocks of Mexican petroleum held in the United States by importers.....		264,578,000
Number of days' supply.....		143

† California stocks, which since July, 1922, have been reported by the Pacific Coast office of the American Petroleum Institute, have been revised. From July to November, refinery stocks of crude oil were included in the total reported by the Institute, but, in order to secure uniformity with the statement of stocks as published in the Standard Oil Bulletin prior to August and with crude oil stocks as published for the States east of California, refinery stocks have been segregated by the Institute which now reports producers', pipe-line and tank-farm stocks of crude oil separately from refinery stocks.

Consumption.—Below will be found the indicated consumption (deliveries to consumers) of domestic and imported crude petroleum for the year 1922, according to the preliminary summary of the United States Geological Survey (in barrels of 42 United States gallons).

Domestic petroleum: (Source by fields):		1922
Appalachian.....		27,188,000
Lima-Indiana.....		2,530,000
Illinois and Southwestern Indiana.....		7,270,000
Mid-Continent.....		256,123,000
Gulf Coast.....		270,665,000
Rocky Mountain.....		28,773,000
California.....		125,318,000
Consumption and exports.....		474,867,000
Exports.....		10,069,000
Consumption in the United States and territories.....		464,798,000
Imported petroleum:		
Consumption in the United States and territories.....		121,561,000
Consumption of domestic and imported petroleum in the United States and territories.....		586,359,000

REFINERY STATISTICS FOR 1922

There were 311 refineries reported to the Bureau of Mines operating in the United States on 31 Dec. 1922, with an aggregate daily indicated capacity of 1,900,560 barrels of crude oil. At the close of the year these plants were operating at 79.28 per cent of their capacity

based on the crude oil run to stills. On the same basis refineries were operating at 72.85 per cent of their capacity on 31 Dec. 1921. According to figures compiled by the United States Geological Survey the indicated domestic consumption of crude oil in the United States during 1922 was 586,359,000 barrels of 42 gallons. Of this amount 500,706,000 barrels of crude oil (both foreign and domestic) was run to refinery stills; thus 85 per cent of the indicated consumption of crude oil was refined, most of the remainder being used as fuel without refining. Refineries operating during the year had an aggregate capacity 12 per cent greater than the total consumption of crude oil. This does not take into consideration the numerous inoperative refineries.

Gasoline.—The December production of gasoline was the largest month's output recorded, amounting to 585,049,677 gallons and exceeding the previous record of last July by over 15,000,000 gallons. This brought the total for the year to 6,202,234,613 gallons, an increase of 20 per cent over the 1921 output.

The 31 December stock of gasoline, 883,792,861 gallons, lacked only about 9,000,000 gallons of the peak stocks of 1 May 1920 with a probable four months of increasing stocks before reaching the peak in 1923. Based on the rate of consumption these stocks represented 64 days' supply. Following out the trend of gasoline stocks with expectation of the customary increase during the early months of the year, the stocks were expected to increase between 300,000,000 and 350,000,000 gallons by 1 May 1923, thus probably totaling about 1,200,000,000 gallons. The indicated domestic consumption of gasoline during 1922 amounted to 5,366,423,822 gallons, an increase of only 200,000,000 gallons as compared with the preceding year and an increase of over 1,000,000,000 gallons in production during 1922 over 1921. Domestic consumption amounted to 86.52 per cent of domestic production.

Kerosene.—The production of kerosene for 1922 was 2,306,326,489 gallons, an increase over 1921 of about 360,000,000 gallons, but slightly below the figures for 1919 and 1920.

Gas and Fuel Oil.—Gas and fuel oil output for 1922 hit a high mark in the industry amounting to 10,706,226,570 gallons, an increase of about 1,000,000,000 gallons or 11 per cent over the production during the preceding year. Stocks on hand at the end of the year were 1,304,727,850 gallons as compared with 1,331,265,439 gallons the first of the year.

Lubricating Oils.—The production of lubricating oils in 1922 was 978,752,469 gallons. This output was exceeded only in 1920 when it was 68,000,000 gallons greater.

The detail of refined products produced during 1922 and reported in total on refinery reports as "Miscellaneous" is as follows (in gallons): Distillates, 835,493,016; tops, 287,577,980; unfinished, 375,251,855; roofers' wax, 101,213; wax tailings, 4,652,753; tar, 746,052; sludge products, 31,556,420; flux, 17,770,328; road oil, 116,235,063; petrolatum, 13,050,657; medicinal oils, 1,568,369; paint products, 4,448,747; total miscellaneous products, 1,688,452,453 gallons.

ANALYSIS OF THE PRODUCTION, CONSUMPTION AND STOCKS OF THE CHIEF PETROLEUM PRODUCTS IN 1922.

	Production (gallons)	Imports (gallons)	Exports (gallons)	Stocks, 31 Dec. 1922 (gallons)	Domestic consumption (gallons)
Gasoline.....	6,202,234,613	56,471,436	594,576,498	883,792,861	5,366,423,822
Kerosene.....	2,306,326,489	Data incomplete	902,535,070	281,050,332	1,463,749,642
Gas and fuel oil.....	10,706,226,570	Data incomplete	776,133,643	1,304,727,850	9,956,630,516
Lubricating oils.....	978,752,469	Data incomplete	333,483,821	235,734,787	626,299,377

Capitalization of United States Oil Companies.—The petroleum industry of the United States represents a capital investment of approximately \$8,000,000,000. Of this total, about 40 per cent is invested in the companies composing the Standard Oil group and 60 per cent in the independent companies. Although the balance is in favor of the independents, figures were presented at the investigation of the industry held in Washington early in 1923 showing that the Standard group continues to hold the dominating position. This, it was alleged, is because the Standard companies control the larger part of the pipe line facilities. New oil companies formed in 1922 numbered 784, representing a total capitalization of \$1,639,693,000, as compared with 936 new companies formed in 1921 with a total capitalization of \$1,255,657,000.

Developments in 1922.—The Mosul oil fields were the cause of protracted international negotiations during the year. The question was complicated by the fact that Mosul was claimed by the Turks at Lausanne. This district has so far not produced any oil but there is every indication that the fields are very prolific. Mosul being in mandated territory, all nations, including the United States, have equal opportunities to obtain oil rights there.

The so-called Chester Concession, granted to Rear Admiral Colby M. Chester and confirmed by the Angora Assembly early in 1923, involves the construction of a railroad covering 2,400 miles of Asia Minor, with mining and mineral rights for 20 kilometres on each side of the right of way, a total territory of 96,000 square miles, ports on the Gulf of Alexandretta and at Samsun on the Black Sea. Along with these lines goes the right to construct canals, roads, telegraphs and telephones, factories, banks, hotels. Most important of all are the oil rights in the Mosul region which are included in the grant. The announcement of the grant at once provoked the opposition of France who put forward rival claims. Great Britain also evinced opposition to the Chester grant. The grant overshadowed the second Lausanne Conference, which met 23 April 1923.

One of the largest deals in Mexican oil history took place in 1922, when a group of Los Angeles promoters obtained from the Mexican government a concession in the oil district of the East coast involving 11,000,000 acres of land. The concession provided that 40 per cent of the gross production is to go to the Mexican government; that a deposit of 400,000 pesos be paid and that 200,000 pesos be invested in works and exploration within a year. Two years are granted for exploration and the concession runs for 20 years with privilege of renewal. Another huge concession obtained

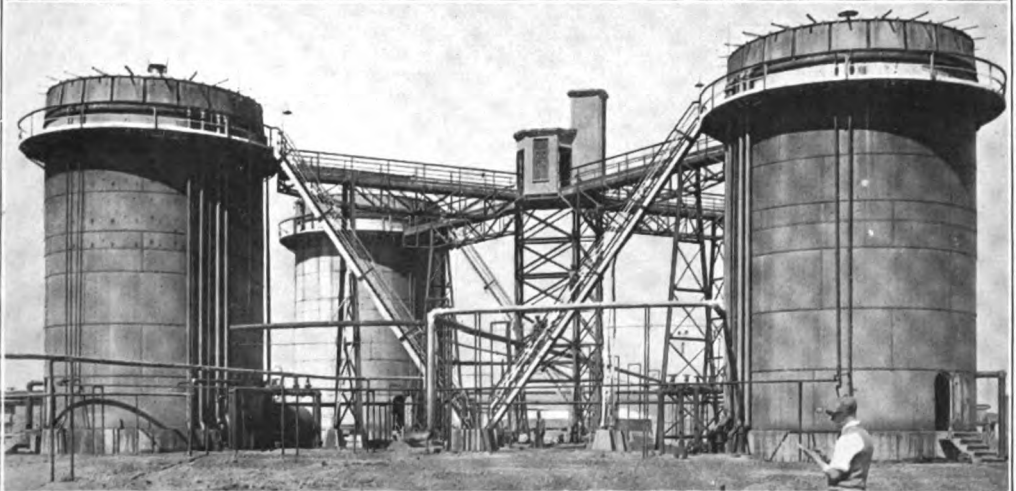
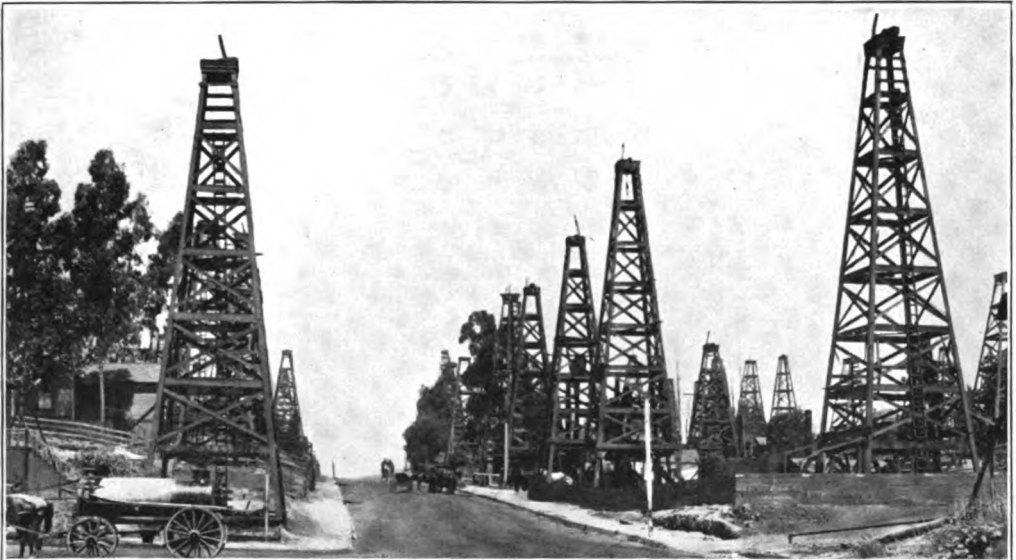
by Americans in Mexico covers the greater part of the State of Nayarit. This concession is held by the Pacific Petroleum Company, and covers oil, mineral and other rights. The discovery of two oil lakes near Point Barrow, Alaska, was announced in November. The oil situation in Russia remained confused throughout the year. The amount available for export was negligible but it was felt that production sufficient to allow of large exports could be had under expert management. Members of the Soviet administration sought to secure the assistance of the Standard Oil, the Shell and the Anglo-Persian companies to work the oil resources of Russia to full capacity.

Prospecting for oil in Australia met with some success, especially in Western Australia and Queensland. The Commonwealth government also bought out the British Government oil properties in New Guinea for £25,000. Poland legislated as to the terms on which she would grant leases for the exploitation of her 800 square miles of oil lands. In February American engineers announced that Japan's oil resources were vastly greater than she had led the world to believe. It was stated that Japan has 300 years of supply at the present rate of consumption, while the United States has only 20 years of probable oil reserve. During 1922 the Persian wells of the Anglo-Persian Company produced over 50,000 tons monthly. This output was delivered to tidewater at Abadan at the head of the Persian Gulf through a 10-inch pipe line 200 miles long. During the year ended 31 July 1922, 607,248 tons of crude oil passed through the Suez Canal on its way to the company's refineries at Swansea, Wales.

Prospecting for new sources of supplies of oil went on in many lands during the year. The Spanish government began the drilling of two 2,000 metre wells, one in Burgos and the other in Viscaya. The discovery of a large oil field in southern France was reported but at the close of the year active operations had not begun there. About 70,000 tons were produced in the Pechelbroun (France) fields. In South America prospecting met with some success in Ecuador, Argentina and Venezuela. Actual boring was begun in the Guayas district of Ecuador and a company was floated in London for the exploitation of the Argentine fields. In Trinidad, British West Indies, 20 companies brought up 82,000,000 gallons of crude oil and three refineries supplied the total local demand for gasoline. Operations in the Mexican fields were limited in the greater part to fields already proved and very little was done in new districts.

Continued oil production in the Red Sea region of Egypt was reported by the Egyptian Minister of Finance. The Burghada and Gem-sah fields of the Anglo-Egyptian Oilfields Com-

PETROLEUM



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1. Oil field near Los Angeles, Calif.
2. Gasoline purifying tanks, East Chicago, Ind.
3. Oil loading rack, East Chicago, Ind.

pany were producing at the rate of 200,000 tons a year from 22 wells.

In Italy the Royal Mining Corporation continued prospecting for oil. Drilling apparatus to the value of 13,000,000 lire was imported from Germany and deep boring operations begun in the Gaeta district and in the Abruzzi, also in Piacenza province.

In the United States the Teapot Dome oil Wyoming lease almost precipitated a political crisis. The major issues involved in this controversy were the importance of an adequate oil reserve for the Navy in time of emergency and whether the Teapot Dome could be drained by wells in the adjoining Salt Creek area, also the propriety of leasing the Dome to the Sinclair interests. Senators and Representatives demanded an investigation of the oil policies of the Government which was undertaken and proceeded during 1922 and in the early months of 1923, the report of the Committee being made in the closing days of the 67th Congress. The report was characterized as very unfair by leading men in the industry in that it charged that one group dominated the industry and virtually fixed prices of both the crude and refined products.

The problem of evaporation losses in oil storage tanks had assumed such proportions that leaders in the industry redoubled their efforts to eliminate it. The only effective scheme was developed during the year by the Standard Oil Company of New Jersey. This company brought out a product called "Sealite," a composition of glycerine, glucose and glue, which floats as a foam on the surface of even the lighter oil products in the tank and is airtight, thereby reducing evaporation about 75 per cent.

The Department of the Interior of the United States government adopted a stricter policy against the granting of rights in oil lands in the United States to citizens of other countries which do not grant similar privileges to Americans. The last official act of Secretary Fall prior to his retirement 4 March 1923, was to hand down a lengthy decision denying the application of the Roxana Petroleum Corporation for approval of the assignment to it of certain oil land leases on the ground that said application came from a company under foreign control. The Secretary based his decision on the findings by the Federal Trade Commission in a report to the Senate in which discrimination against American interests was alleged. See also CHEMISTRY. Subsection ORGANIC AND BIOLOGICAL.

PHARMACOLOGY. See MEDICINE AND SURGERY, ADVANCEMENT OF.

PHILIPPINE ISLANDS, the largest group of the Malay archipelago, extending north and south from Formosa almost to Borneo. The area of the group is 114,400 square miles. There are in all 7,082 islands, of these 2,441 are named and 4,642 are not. The chief islands, with their areas, are: Luzon, 40,814 square miles; Mindanao, 36,906 square miles; Samar, 5,124 square miles; Negros, 4,903 square miles; Palawan, 4,500 square miles; Panay, 4,448 square miles; Mindoro, 3,794 square miles; Leyte, 2,799 square miles, and Cebu, 1,695 square miles. The population in 1918 was 10,350,730, mostly Malays. Of the

entire population 91.5 per cent are Christians and 8.5 per cent (886,999) are Moros and Pagans. The chief city is Manila with a population of 283,613. This number, according to the census, included 257,356 Filipinos, 17,856 Chinese, 3,124 Americans, 1,955 Spaniards, 1,611 Japanese, 635 English, 236 Germans and 160 French. Other large towns, with their populations, are: Iloilo (Panay), 48,000; Cebu (Cebu), 46,000; Albay (Luzon), 43,000; Zamboanga (Mindanao), 30,000; Batangas (Luzon), 41,182, and Ormoc (Leyte), 38,247. In the entire archipelago there were in 1918, 5,776 American, 43,802 Chinese, 7,806 Japanese, 3,945 Spaniards and 1,148 English.

Religion.—The principal religion of the islands is the Roman Catholic, of which in 1918 there were 7,815,242 members, almost 80 per cent of the entire population. The Independent Filipino Church, founded in 1901, has 1,361,740 members. This church is identical in dogma and polity with the Roman Catholic excepting that it rejects the authority of Rome. Protestant denominations have 118,845 members. In Mindanao and Sulu there are many Mohammedans and in the more remote regions there are many tribes of Pagans.

Education.—Primary education is free. Teachers are secular. The chief aim of the primary system is the spread of literacy on the basis of English as a common language. There are 791,626 pupils in public schools. Special schools for the special benefit of non-Christian populations are maintained by the Government. For higher education there is the University of the Philippines and the University of Santo Tomas, founded in 1611. There are in the islands 262 private schools of various kinds with 28,838 pupils. The latest census of periodicals reported 21 newspapers and periodicals in English, 15 in English and Spanish, 22 in Spanish, 9 in Spanish-native dialects, 3 in English-native dialects, 25 in native dialects 2 in Chinese and 1 in English-Spanish-native dialects.

Finances.—The revenues of the central government in 1921 amounted to \$84,289,932. The expenditures during the same period amounted to \$83,549,778. The debt service in 1921 amounted to \$3,459,281.

Production.—The chief products of the islands are rice, hemp, cocoanut, sugarcane, tobacco, Indian corn and maguay. In 1919 these crops occupied 7,513,305 acres, of which 3,453,000 acres was planted under rice. The total production of rice was 2,533,623,664 liters. Cocoanuts and their products the same year were valued at \$37,200,000, and sugar and its by-products were valued at \$38,000,000. In 1922 hemp (abacca) production was estimated at 1,200,000 bales. There are 73,000,000 acres of public lands. The forest lands cover about 40,000 square miles and furnish various gums and rosins, rattan, and bamboo, tan barks and dye woods. Mineral deposits of the Philippines include gold, iron, silver, copper, coal, limestone, clays, asbestos, gypsum, gas, petroleum, asphalt, alum, manganese, salt and some gems and precious stones. The chief manufacturing industry is hat making.

Commerce.—Imports into the Philippines in

1922 registered a total value of 160,395,000 pesos—a decrease of 71,282,000 pesos from 1921—and exports in 1922 amounted to 191,167,000 pesos, or an increase of 14,936,000 pesos over exports of the previous year. In 1922 exports exceeded imports by 30,771,000 pesos, compared with an adverse balance of trade of 55,446,000 pesos in 1921. "It is," says the United States Department of Commerce, "highly significant of the basic economic soundness and recuperative powers of the Philippines that 1922 (the first year after the period of greatest depression in the history of the islands) should have witnessed a favorable trade balance far in excess of any previous year other than the three specific years of the war-period boom—1916, 1917, and 1918."

Compared with 1913, imports in 1922 increased 50 per cent and exports about 100 per cent. The principal items of export are shown in values and quantities for 1922 in the following table:

EXPORTS FROM THE PHILIPPINES

ARTICLES	1922	
	Quantity	Pesos ¹
Sugar, kilos.....	362,072,000	51,165,000
Abaca (Manila hemp), kilos.....	172,027,000	39,082,000
Coconut oil, kilos.....	107,208,000	31,469,000
Copra, kilos.....	173,052,000	28,206,000
Cigars, number.....	300,485,000	11,602,000
Embroideries.....		6,515,000
Leaf tobacco, kilos.....	15,130,000	4,546,000
Maguay, kilos.....	19,717,000	2,973,000
Copra meal, kilos.....	67,147,000	2,435,000
Lumber and timber, cubic meters.....	43,000	1,667,000
Cordage, kilos.....	2,632,000	1,099,000
Hats, number.....	389,000	951,000
Pearl buttons, gross.....	544,000	419,000
All others.....		9,038,000
Total.....		191,167,000

¹ One Philippine peso = \$0.50.

Sugar exports, while in value practically the same in 1922 as in 1921, were in quantity much greater in 1922 than in 1921, the quantity in the latter year having been 289,876,000 kilos (value, 51,037,000 pesos). The decrease in value in 1922 was attributed to the enforced sale by many planters early in the year, at extremely low prices because of the immediate need of funds.

The decrease in imports in 1922 was the natural result of overstocks brought on by the heavy arrivals in 1921 of many goods ordered during the boom period. The values of the principal imports during the two years are given in the table in the next column.

Exports to the Islands from the United States in 1922 amounted to \$43,298,142, against \$46,516,049 in 1921, the principal decrease being in iron and steel. Imports from the Philippines are estimated at approximately \$60,700,000 against \$52,161,812 in the previous year.

Communications.—Manila is the chief seaport and through it the bulk of the overseas commerce of the islands passes. Over 400 vessels are engaged in the coastwise inland trade. During the year there entered 740 ocean-going vessels having an aggregate net tonnage of 1,711,981. There are 818 post offices, 318 money order offices, 5,471 miles of telegraph lines, 986 miles of cables and 315 telegraph and cable

PHILIPPINE IMPORTS.

ARTICLES	1921	1922
	Pesos	Pesos
Cotton piece goods.....	25,464,000	34,408,000
Iron and steel.....	44,110,000	15,209,000
Cotton goods except cloth.....	12,184,000	12,821,000
Wheat flour.....	7,017,000	5,783,000
Crude oils.....	954,000	5,338,000
Coal.....	6,987,000	5,009,000
Paper and paper goods.....	6,066,000	4,920,000
Meat products.....	6,256,000	4,623,000
Rice.....	6,649,000	4,604,000
Dairy products.....	4,325,000	3,925,000
Gasoline.....	8,852,000	3,804,000
Illuminating oils.....	9,015,000	3,476,000
Silk and manufactures.....	3,722,000	3,117,000
Chemicals, dyes, drugs, etc.....	3,349,000	2,946,000
Fish and fish products.....	2,966,000	2,835,000
Tobacco manufactures.....	3,212,000	2,480,000
Electrical equipment.....	3,402,000	1,892,000
Cattle and carabao.....	4,075,000	1,661,000
Leather and manufactures.....	1,786,000	1,564,000
Automobiles and parts.....	9,645,000	1,407,000
Lubricating oils.....	3,943,000	655,000
All other imports.....	57,718,000	37,918,000
Total.....	231,677,000	160,395,000

offices on the islands. The 388 postal savings banks have 68,860 accounts. There are 778 miles of railways on the islands and 6,200 miles of roads. In addition to this there are 1,941 miles of trails, passable for horses only.

Government.—The chief executive of the islands is a Governor-General, who represents the sovereign power of the United States. He is appointed by the President of the United States by and with the consent of the Senate. He is aided by six secretaries of executive departments—interior, public instruction, finance, justice, agriculture and natural resources, and commerce and communications. All the secretaries are Filipinos with the exception of the vice-governor, who is also secretary of public instruction. The legislature consists of a Senate and a House of Representatives. The Senate consists of 24 members and the House of Representatives of 91 members. Members of both houses are elected by popular vote with the exception of nine representatives and two senators, who are appointed by the Governor-General to represent certain districts. The executive and legislative departments are connected by a Council of State composed of the Governor-General, as president, the president of each house of the legislature and the secretaries of the departments. The Department of the Interior exercises supervision over the provincial and municipal governments. Each province has a provincial governor. Justice is administered through a supreme court, the court of first instance, the municipal court of the city of Manila and the courts of the justices of peace. The Governor-General in 1922 was Maj.-Gen. Leonard Wood, who assumed office 5 Oct. 1921.

PHILIPPINES, University of the, a State-supported co-educational institution, founded in 1908 and located at Manila, Philippine Islands. In 1922-23 it had a faculty of 310 members, 4,839 students, and property valued at 3,342,464.18 pesos (a peso is equivalent to 50¢ American money). Its income in 1922 was 188,735.86 pesos. Guy Potter Benton, LL.D., is president.

PHILLIPS UNIVERSITY, a coeducational institution belonging to the Disciples of Christ, founded in 1907 and located at University Station, Enid, Okla. In 1922-23 it had a faculty of 43 members, 1,203 students, property valued at \$1,051,177.74 and an income of \$174,792.54. Isaac N. McCash, A.M., LL.D., is president.

PHILOLOGY. Classical.—The student of linguistic history assuredly owes a debt of gratitude to the untiring zeal of the scholars not only of our own American universities, but likewise to those of British and foreign schools of learning who by their erudition and research continue to bring to light new and hidden treasures of classical lore. Nor should he consider himself less beholden to those other indefatigable bands of American, British and Italian archaeologists who for so many years past have been devoting themselves with a persevering unselfishness to the unearthing of precious relics and records each one of which serves as a gem for the enhancement of the glory of philological science. Within the necessarily narrow space allotted to this present summary we are able to deal *seriatim* with articles from a limited number only of the many important philological publications. Such a resumé however, it is hoped, will amply serve to indicate the nature of the subjects and the value of the articles which have appeared in those other learned journals which we are restricted to mentioning only by name. It is with sentiments of genuine regret that at the outset of this article we find ourselves recording the deaths of Charles E. Bennett, Samuel Ball Platner, John M. Burham and Francesco Flamini, late professor of Italian literature at Pisa. The loss of these brilliant writers to classical scholarship will be long and keenly felt. Accounts of their careers are to be found in *The American Journal of Philology* (1922), and in *The Romanic Review* (1922). The *London Mercury* (November 1922), itself an able and brilliant literary monthly, draws attention to 'The Year's Work in Classical Studies' edited by W. S. Jones at Bristol, England. In this learned review are to be found summaries of books and articles dealing with Italian Archaeology and Excavation, Latin Palæography, Latin Literature, Greek and Roman Religion, Grammar, Lexicography and Metric. (It is little wonder that the editor states that he finds it increasingly difficult to get his kind of work done!) By means of such excellent summaries, which no thoughtful student should miss, one is able to keep more or less *au courant* with the divers articles scattered here and there throughout numerous periodicals. Similar useful abstracts and reviews are to be met with in the American university classical journals and others of especial mention such as *The Classical Weekly* (under the heading, 'Classical Articles in Non-classical Periodicals'), *The Classical Review*, *The Classical Quarterly* and the *Philologische Wochenschrift*. This last mentioned periodical is of exceptional value by reason of its exhaustive and detailed summaries and reviews of German, French, Italian and American writings.

Besides the rich additions in classical trans-

lation for which the Loeb Library is justly noted, equally valuable work in this same direction is being done constantly by writers in the various classical journals, particularly in America and England.

In the *American Journal of Philology* (Vol. XLIII, 1922) were published the following articles, "Some Roman Elements in the Tragedies of Seneca," by R. B. Steele, in which the writer shows how the tragedies are in reality political essays, the Greek characters being employed by Seneca to present his personal views in regard to actual Roman conditions; "Secare Partis—The early Roman Law against a Debtor," by M. Radin (an article reminiscent of Shylock's "pound of flesh"); "Illustrations of Tibullus," by W. P. Mustard; "Horace Epistle I. xix:28-9," by M. B. Ogle, another of those passages needing elucidation for the better appreciation of Horace's literary theories; "Sex Determination and Sex Control in Antiquity," by Eugene S. McCartney—a most enthralling article, in which amusing instructions regarding this subject are quoted from Hippocrates' *De Sterilitate*; "A Misunderstood Syrian Place-Name," by W. F. Albright; "Notes on Two Inscriptions from Sinope," by David M. Robinson. These inscriptions are deposited in the Museum of Constantinople, in both of which reference is made to Homer; "Saint Augustine's Method of Composing and Delivering Sermons," by Roy J. Deferrari—an article of absorbing interest and proving from the inherent style of the discourses as well as from the words of the Saint himself that they were delivered *ex tempore*; "When is Generic *Mh* Particular?" by A. G. Laird; "Single Word *versus* Phrase," a discussion on a question of semantic equivalence, by Edward W. Nichols; "Two Passages in Pindar," by F. A. Wright; "Origin of the Name Cilicia," by W. F. Albright; "Imprisoned English Authors and the 'Consolation of Philosophy' of Boethius," by Guy Bayley Dolson (Sir Thomas More wrote an imitation of it—"A Dialogue of Comfort against Tribulation"); "The Derivatives of the Sanskrit *eka*," by Edwin H. Tuttle.

In the third number of this volume other articles of interest appearing were: "Die Entstehung des Absoluten Infinitive im Griechischen," by Arnold Roseth; "Virginia Georgics," by Herbert C. Lipscomb; "Biblical Studies," by Paul Haupt, in which are discussed among other questions the nature of the Sixth Plague of Egypt, and the etymology of Manna (*Aramaic*—*mān-hū*) and "The Fasti of Ovid and the Augustan Propaganda," by Katherine Allen.

Important reviews are also to be found in this volume, chief of which are those of G. C. Fiske, 'Lucillus and Horace,' by A. I. Wheeler; of Ludwig Traube, 'Vorlesungen und Abhandlungen,' by E. K. Rand; of Carl Robert, 'Die Griechischen Heldensage,' by D. M. Robinson; of Dr. Eduard Stemplinger, 'Horaz im Urteil der Jahrhunderte,' by W. P. Mustard; of Professor John A. Scott, 'Unity of Homer' by S. E. Bassett; of Jerome Carcopina, 'La Loi de Hieron' by Pierre Lepaulle; of F. G. De Pacheterre, 'La Table Hypothé-

caire de Veleia,' by Tenney Frank; of Harold H. Bender, 'A Lithuanian Etymological Index' by Carl D. Buck. An especially appreciative review is that of Major D. Lorimer's valuable book, 'Phonology of Bakhtiari, Badakshani and Madaglashti' (dialect of modern Persian), by A. V. Williams Jackson. In this volume also helpful summaries and reports are to be found of the following foreign periodicals, *Romania* (Vol. XLVI, 1920) by George C. Keidel; *Revue de Philologie* (Vol. XLIV 1920), W. P. Mustard; *Rivista di Filologia* (Vol., XLIX, 1921), W. P. Mustard; *Glotta* (Vol., XI, 1920-21), by Franklin Edgerton; *Philologus* (Vol., LXXVI, 1920), by George Dwight Kellogg; *Hermes* (Vol., LV, 1920) 3 and 4, by Herman Louis Ebeling. A further array of equally brilliant articles and reports similar to those above quoted, and displaying the same scholarly acumen and captivating style of presentment will be found in the pages of the following classical periodicals: *The Proceedings of the American Academy of Arts and Letters*, the *Harvard Studies in Classical Philology*, *The Classical Journal*, the *University of Illinois Studies in Language and Literature*, the *University of Missouri Studies*, the two well-known English periodicals, the *Journal of Hellenic Studies* and the *Journal of Roman Studies* together with the *Philological Quarterly* published at the University of Iowa and edited by Prof. Hardin Craig and an able coterie of confrères, the first number of which appeared in January 1922. Among the numerous classical works of ecumenical interest which were published during the year 1922 we particularly note: 'Seneca and Elizabethan Tragedy,' by F. L. Lucas (Cambridge University Press), a summary of Greek and Roman tragedy with an account of English drama and its beginning, written in a light and interesting vein free from adherence to statistics which so often bore; 'Sortes Vergilianae or Vergil and Today,' by Prof. D. A. Slater (Oxford) with an introductory poem giving Vergil's message to the present age; 'Etruscan Tomb Paintings,' by F. Poulsen (Oxford Clarendon Press), translated by G. C. Richards; a monograph of first rank; 'Greek Vase Painting,' by Ernest Buscher, translated by G. C. Richards (Chatto and Windus, London), "A work," remarks Professor Gardner in his preface, "not likely to be superseded for some time to come"; 'Notes on the Text of Aeschylus,' by E. S. Hoernle (Oxford). Evidence of great care and close study is shown by this author who succeeds in picking holes in "good texts"; 'Babylonian Problems,' by Lt. Col. W. H. Lane, of the Indian Army (Murray, London). This enthralling study has twenty appendices containing translations of a large number of the cuneiform inscriptions of the Neo-Babylonian period, and extracts from the classical, post-classical and Arab historians and certain modern writers; 'The Reed of Pan,' by A. C. Benson (Murray). This well known author makes a new departure in this entertaining volume which consists of 140 epigrams from the Greek anthology done into English lyric verse; 'La Légende Socratique et les Sources de Platon,' par Eugene Dunreel (Oxford University Press); 'Aristotle on

Coming-to-be and Passing-away' (De Generatione et Corruptione), a revised text with commentary by Harold H. Joachim; 'De Coelo' (Works of Aristotle) translated by J. L. Stocks (Oxford Clarendon Press); 'Lucreti de Rerum Natura,' libri sex recognovit, C. Bailey (Editio, altera, 1922, Oxford Classical Texts); 'Aeschylus Persae,' partly in the original and partly in translation, by M. R. Ridley (1922, Clarendon Press); 'Herodotus, Book VII,' partly in the original, partly in translation, edited by C. E. Robinson; 'Flosculi Latini' "tam filo quam colore praestantes quos non sine lappis tribulisque congestis," Arturus Blackburne Poynton; 'Die Griechische Heldensage,' von Carl Robert (Weidmannsche Buchhandlung, Berlin 1920). No one who is eager to sift down to the bottom of Greek mythology or to become an expert on the Greek epic, lyric, and tragic poetry can afford to ignore this volume; 'An Economic History of Rome,' by Tenney Frank, Latin Professor at Johns Hopkins University, a work already acknowledged as standing alone in its completeness as a study of the governing center of ancient civilization; 'Negotium Perambulans in Tenebris,' Etudes de Démomologie Greco-Orientale, par Paul Perdrizet, 'Publications de la Faculté des Lettres de l'Université de Strasbourg' (Oxford University Press, London); 'The Wrath of Achilles,' translated from the Iliad into Quantitative Hexameters by George Emle (Oxford University Press). The translator apologizes for his choice of quantitative hexameters by claiming that the accentual hexameter of Kingsley, Clough and Longfellow is clumsy, monotonous and unworthy of its classical prototype; 'Seneca, the Philosopher and his Modern Message,' by Richard Mott-Gummere, a volume emphasizing our debt to Greece and Rome; 'Rome, La Grèce et les monarchies hellénistiques au troisième siècle avant Jesus Christ,' par Maurice Holleaux, (Bib. des Ecoles Françaises d'Athènes et de Rome); 'Martial the Epigrammatist and other Essays' by Kirby Flower Smith—an instructive volume in which are to be found beside the title subject the following sketches: 'The Poet Ovid,' 'Propertius, a modern lover in the Augustan Age,' 'Pupula Duplex,' 'The Classics and our Vernacular,' 'The Future Place of the Humanities in Education,' 'Original Verse and Translations.'

Facility in Latin verse and Latin prose is constantly evidenced in the work of the younger generation of American classical scholars. Doctoral dissertations (published by the Library of Congress) likewise bear witness to the recondite nature of the classical theses expounded by the alumni of American universities when presenting themselves as candidates for the Doctorate in Philosophy. At this point we draw attention to a remarkable triumph in original classical epigraphy achieved by Professor Wilamowitz-Moellendorf. The inscription he has written is placed on the monument erected to the students of Berlin University who fell in the World War, and consists of this striking phrase: *Inuictis Victi Victuri*. In the whole realm of inscriptional literature nothing more comprehensively brief has been written. Three distinct words express the lightning flash of genius recording

a single fact in Caesar's traditional "Veni, Vidi, Vici." In Professor Moellendorf's epigram we have conjured up before our minds a tremendous sweep of vision by the power of *one* word in three forms, which in its superb simplicity records a nation's honor, humility and hope. No legend that was ever placed on a triumphal arch in the most victorious days of ancient Rome can surpass in terseness, dignity and strength this superb and stately epitaph of modern times.

In the field of palaeography are to be found two valuable contributions worthy of especial notice: 'A History of the Art of Writing,' by W. A. Mason—a comprehensive undertaking in which the author shows that he has availed himself of recent archaeological research and which is written in a style at once easy, entertaining and convincing; The 'Codex Sinaiticus,' reproduced in facsimile by Helen and Kirsopp Lake. The discovery of the 'Codex Sinaiticus' by Tischendorf in 1844 is one of the most absorbing stories in the history of palaeography. A description of the finding of the Codex is given by Kirsopp Lake as an introduction to the document. (Published by Humphrey Milford, Oxford University Press, New York).

In the field of archaeology two important discoveries are to be recorded—one is that of the City of Ur of the Chaldees, birthplace of the patriarch Abraham, excavated after four thousand years by American and British archaeologists. Records have been found that ante-date the dawn of history. The other is the epochal disclosure of the tomb of Tutankhamen at Luxor, Egypt, by members of the archaeological expedition under the direction of Lord Carnarvon. This Pharaoh has been from existing records one of the best documented in the long line of Egyptian kings.

Modern.—One of the most significant phases of the aftermath of the World Conflict has been especially among European nations, the removal of discordant racial elements which has left groups of homogeneous peoples to work out their own salvation. Equally significant is the revival of interest in the study of language by which many of these seek to make stable their self-determination and to cement their newfound racial unity. Hence it is that the knowledge of this national trend of thought among these various unities has given an impetus to scholars to examine further and more closely the basic principles underlying comparative linguistics. In so doing, they are following the new French school of philologists, who with their brilliant leader, M. Meillet, recognize that linguistic progress and change are bound up with political and social movements of civilization: "Le changement linguistique est lié à des faits de civilisation." Thus the study of philology itself has assumed a new phase of development. Methods heretofore for the most part eschewed have now been resolutely adopted, while others already in use have been improved and extended in this vast region of research whose paramount import to mankind has been but emphasized by the welter of conflicting national interests and the cataclysmic confusion which the World War has left in its trail. By such broad methods and principles of investigation will the future progress of philology be

secured. A work well worthy of reference in connection with the foregoing statements is that of Wilhelm von Humboldt, 'Ueber die Kawi-sprache auf des Insel Jawa,' and the introduction to the same, 'Ueber die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts.' (On the Difference in the Construction of Language and its Influence upon the Intellectual Development of the Human Race").

General.—The general output of work in the province of modern philology during the year 1922 proved as rich and abundant as that in the classical. Whether the matter dealt with has practical bearing on modern education or whether it be a topic abstruse and profound requiring the application of diagnosis or synthesis, the treatment almost invariably is characterized by solid learning, much research and attractiveness of exposition. Where so much is excellent there is perplexity of choice. Among subjects of a general nature we note: 'Language, its Nature, Development and Origin'; by Otto Jespersen in the *Journal of Education and the School World* (London 1922); 'The Place Names of Middlesex' (Including those parts of the City of London formerly contained within the boundaries of the old county), by J. E. B. Gover (Longmans, Green & Co., London); 'The Newton Stone and other Pictish Inscriptions,' by Francis C. Diack (Gardner, Paisley, Scotland); 'Das Alphabet in Mystik und Magie,' by Franz Dornseiff; 'A short History of the International Language Movement,' by Albert Guérard. A sober and able treatment of this vexed question. This problem is neither a fad nor a Utopian dream but a fact. British and American officers during the war found it pressed upon them every day with tragic insistence. A book deserving of serious consideration.

Noteworthy contributions in relation to various languages herewith mentioned may be chronicled as follows:

Sanskrit.—'The Madhyama Vyayoga-Adra-na by the poet Bhasa from the original Sanskrit,' with notes, Ernest Paxton Janvier; 'The Life and Story of Jaina Savior Parcvanatha,' by Maurice Bloomfield, Prof. of Sanskrit, Johns Hopkins University; 'A complete English-Persian Dictionary,' compiled from original Sources, by Sir Arthur N. Woollaston, K.C.I.E. (2nd edition reprinted); 'Siksha Samuccaya, a compendium, of Buddhist Doctrine,' compiled by Santideva, translated from Sanskrit by Cecil Bendall, M.A. late professor of Sanskrit, University of Cambridge, and W. H. Rouse, M.A. Headmaster of the Perse School, Cambridge.

Celtic.—'An Elementary Welsh Grammar,' Part I. Phonology and Accidence, by Sir J. Morris-Jones, (Clarendon Press, Oxford); the 'Bulletin of the Board of Celtic Studies, University of Wales' (published by Humphrey Milford, Oxford University Press, New York).

Spanish.—Revista de la Facultad de Letras y Ciencias, (Vol. XXXI. Nums. 3 y 4. Julio-Diciembre 1921, universidad de la Habana; Español (Vol. V, Nums. 4 y 5); Inter-América (Noviembre 1921, Enero 1922, Vol. V. Num. 6. Marzo de 1922, Vol. VI, Num. I. Mayo de 1922).

French.—'Grammaire Elementaire,' 2ième

année, by Emma C. Armand (Boston, New York, Chicago); 'Le Langage: Introduction linguistique à l'histoire,' par J. Vendryes; 'Les diminutifs de noms propres de lieux,' par Auguste Vincent, (*Revue Belge de Philologie et d'Histoire*. Tome I. No. 2., Avril 1922); 'Archives Berbères et Bulletins de l'Institut des Hautes Etudes Marocaines,' (*Hesperis*, Tome I. Année 1921).

Italian.—'Le Origini del Romanzo-Greco,' by Bruno Lavagnini; 'Dizionario italiano-inglese e inglese-italiano,' by G. Richieri; 'Dizionario navale-italiano-inglese e inglese-italiano' for naval engineers and architects, by W. T. Davis.

Slavic.—'Early Jug-Slav Literature' (1000 A.D.-1800), by M. S. Stanoyevich; *Revue des Etudes Slaves*, ed. par A. Meillet et Paul Boyer.

Gothic.—'Contributions toward a History of Arabico-Gothic Culture' (in Vol. IV. *Physiologus Studies*, Philadelphia).

English.—Both useful and interesting works are the following: 'A Middle English Vocabulary,' by J. R. R. Tolkien, designed for use with Sisam's 'Fourteenth Century Verse and Prose' (Clarendon Press); 'Fourteenth Century Verse and Prose,' by Kenneth Sisam (Clarendon Press); 'Some Contributions to the English Anthology,' a garland from little unfamiliar books of the seventeenth century; by John Drinkwater, (British Academy). 'An Anglo-Saxon Reader,' by Henry Sweet, in prose and verse, with Grammar, Metre, Notes and Glossary (Clarendon Press), 'Language: An Introduction to the Study of Speech,' by Edward Sapir; 'A History of Modern Colloquial English' by Professor H. C. Wyld, (Liverpool University); 'A Bibliography of the English Language and Literature,' (Modern Humanities Research Association); 'A Senior English Grammar,' by R. B. Morgan, M.Litt., Inspector of Schools to the Croydon Education Committee and H. A. Treble, M.A.

Germanic.—Two important works in lexicography are 'Deutsches Wörterbuch,' by H. Paul (Halle) and a new edition of 'Wörterbuch der deutschen Sprache' (Berlin), published for the first time over forty years ago.

Miscellany.—'The Nighantu and the Nirukta,' the oldest Indian Treatise on Etymology, Philology and Semantics, translated for the first time into English by Lakshman Sarup, (Oxford University Press, London); 'Evolution of Māghadī,' by Anantaprasad Banerji-Sāstri (ib.), of interest to students of Indian linguistics; 'The Bantu and Semi-Bantu Languages,' a comparative Study by Sir Harry H. Johnston (Vol. II, 1922, Clarendon Press); 'The Legend of Ulenspiegel,' by Charles de Coster, translated by F. M. Atkinson, the first complete English translation of this great Flemish Masterpiece; 'Anthologie des Ecrivains Belges,' by L. Dumont-Wilden; 'Les grands Ecrivains de la France,' (33ième Vol. ed. par A. de Boislisle), based on original manuscripts with notes of impeccable erudition; 'French Terminologies in the Making,' by Harvey J. Swann, Ph.D.; 'Infinitive Constructions in Old Spanish,' by Wilfred A. Beardsley, Ph.D.; the American edition of 'Pequeño Larousse Ilustrado,' based on the latest edition of the 'Diccionario de la Real Academia Espanola,' and comprising over

9000 Americanisms in use among Spanish-Americans and in the Philippines; 'Modern Provençal Phonology and Morphology studied in the language of Frederic Mistral,' by Harry E. Ford, Ph.D. (Columbia University Press, New York); 'Toulouse and the Renaissance,' by J. C. Dawson, Ph.D. (ib.); 'Spanish Literature': A Primer, by James Fitzmaurice-Kelly, (Clarendon Press); 'The Rig-Vedaprātishākhya with the Commentary of Uvata,' English Translation and several appendices by Mangal Deva Sastri, (Oxford University Press); 'The Book of Kindred Sayings' (Sanyutta-Nikāya or 'Grouped Suttas') Part II. Translated by Mrs. Rhys Davids, assisted by F. H. Woodward, (Oxford University Press); 'Histoires de lettres françaises de Belgique,' by Maurice Gauchez, (édition de la Renaissance d'Occident).

In the *Romanic Review* (Vol. XIII) appeared the following articles and reviews, the titles of which sufficiently indicate the nature of their interest: 'The Floral Games of Toulouse,' by J. C. Dawson; 'Chaucer and Medieval Hunting,' by Oliver F. Emerson; 'A Bibliography of Peruvian Literature,' (1821-1919), by Sturgis E. Leavitt; 'Doña Maria de Zayas y Sotomayor,' by Lena E. V. Sylvania; 'Deux Poèmes de Peyre Cathala,' by C. Fabre; 'La Aparición que Hizo Jesu Christo a los Discipulos que Yvan a Emaus,' an early sixteenth century play, by Joseph E. Gillet; 'American Travellers in Spain,' 1777-1867, by C. Evangeline Farnham; 'Two Commedie dell'Arte on the 'Measure for Measure' Story,' by Winifred Smith; 'Bernard de Poey, Contemporary of the Pléiade,' by J. C. Dawson; 'The Chronology of the Earlier Works of Chrestien de Troyes,' by Lucy M. Gray; 'The Original Version of Torres Naharro's Comedia Tinellaria,' by Joseph E. Gillet; 'Storm-Making Springs: Studies on the Sources of 'Ivan,' by George L. Hamilton; 'Old French 'Trover en escrit,' by Julian E. Harris; 'The Missing Lines of 'La Estrella de Sevilla,' by S. Griswold Morley; 'A Bibliography of Bolivian Literature,' by Sturgis E. Leavitt; 'The Old French 'Lai de Nabaret,' by Gertrude S. Loomis; 'An Examination of Some Sources of 'Don Alvaro,' by E. A. Peers; 'Alessandro Manzoni-Beccaria, Romanticist,' by Mary V. Young; 'The Italian Sources of Antonio Scoppa's Theory of French Versification,' by P. S. Zampière.

Interesting reviews in this volume were of: 'F. F. Communications,' (Nos. 32-41) edited by the Folklore Fellows; 'Norske Folkeminne utgjevne av den Norske Historiske Kildeskritikk-kommission' (II. Norske Eventyr); 'Antologia Portuguesa organizada por Agostinho de Campos,' by T. F. Crane; and of Alfred Franklin, 'Paris et les Parisiennes au Seizième Siecle,' by Hélène Harvitt.

In Volume XI of the 'University of California Publications in Modern Philology,' dedicated to Charles Mills Gayley, are to be found the following engrossing articles: 'The Accentuation of the Research-Group of Words,' by Cornelius B. Bradley, M.A.; 'James, Bergson, and Determinism,' by Evander Bradley McGilvary, Ph.D.; 'Some old French Miracles of Our Lady and Chaucer's 'Prioresses Tale,' by Walter Morris Hart, Ph.D.; 'The Art of Nar-

rative in Autobiography," by Chauncey Wetmore Wells, A.B.; "Twelve Andamanese Songs," by Benjamin P. Kurtz, Ph.D.; "The Transmission of Folk Tales," by Stith Thompson, Ph.D.; "English and American Appreciation of Rabelais," by George Rupert MacMinn, A.B.; "Coleridge's Estimate of Fielding," by Frederic T. Blanchard, B.L., M.A.; "Blake, Carlyle, and the French Revolution," by Harold Lawton Bruce, Ph.D.; "Poe's Doctrine of Effect," by George F. Richardson, Ph.D.; "Psychoanalysis and Literary Criticism," by Herbert Ellsworth Cory, Ph.D.; "Androcles and The Lion," by Arthur Gilchrist Brodeur, Ph.D.; "The Litany in English," by Jane Gay Dodge, A.B., M.A.; "The Lady from the Sea," by Sigurd Bernard Hustvedt, Ph.D.; "An Essay on Gaelic Ballads," by William W. Lyman, Jr., M.A.; "A Method of Studying the Structure of Primitive Verse Applied to the Songs of the Teton-Sioux," by Guy Montgomery, M.A.; "A List of the Published Writings of Charles Mills Gayley from 1881 to 1920."

From the foregoing epitomized survey of the work done in the realms both of classical and modern philology during the year 1922, may be gathered the varied trend and gradually expanding scope in linguistic research, the resulting possibilities of which in the near future may well be regarded as incalculable. The student who would become efficient in this important branch of language study has ample facilities of so doing if he but avail himself of the rich treasure-troves constantly placed at his disposal.

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PHOSPHORIC ACID, Manufacture of.

See CHEMICAL MANUFACTURING.

PHYSICS. Investigators in Physics are chiefly engaged at present in testing the various striking and more or less speculative theories and hypotheses to which the world of science fell heir in the years just before the war and in applying these theories to increasing our knowledge of the properties of matter.

Proposed tests of the Einstein theories.—The solar eclipse of 21 Sept. 1922 afforded a new opportunity of determining whether the bending of rays of light in passing the immediate environment of the sun corresponds to that demanded by the mechanics of Newton or accords with the equations proposed by Einstein. The astronomers have reported favorable conditions and the results are said to confirm the prediction of Einstein, but the definite results will not be known for several months. In the meantime laboratory tests, conceded to be crucial have been carefully discussed and very elaborate and exacting experiments are actually in progress. The conclusions will interest especially the not inconsiderable school of physicists who regard the Einstein theories as effective but artificial mathematical devices for overcoming some of the difficulties with which modern science is confronted.

Disintegration of the Elements.—Sir Ernest Rutherford and his co-workers at the

University of Cambridge are continuing their investigations upon the breaking down of certain elements such as boron, nitrogen, fluorine, sodium, aluminum and phosphorus under bombardment by alpha rays. It is found that particles which can be identified as hydrogen nuclei are driven off from the surface of the bombarded substance. No other element tested, and this included all those of atomic number up to 19, was found to suffer loss of hydrogen nuclei under the conditions of the experiment. Rutherford¹ suggests that the hydrogen nuclei liberated from these six elements "probably exist as satellites circulating around the main nucleus" of the atom. Upon collision with an alpha particle the satellite acquires sufficient momentum to be expelled from the atomic structure. It is further inferred that elements such as lithium, chlorine, etc., which are unaffected by bombardment, have no positive hydrogen particles as satellites, or only such as are more closely bound to the system. This sort of disintegration is not quite the same thing as the much talked of transmutation of metals. It is more closely related to the transformations which are continually breaking down the radio active elements.

Quantum Theory, The.—Among the newer theories to find fruitful applications in the work of today the quantum theory is conspicuous. Silberstein² in a discussion of the photographic process, for example, has cleared up one of the chief difficulties in the photo-chemical theory. It has been hard to understand how, under the continuous application of light, occasional grains in the sensitive film should be completely exposed while neighboring grains seem to be immune. This well established but hitherto unexplained fact becomes an almost necessary result of the quantum theory, according to which light is split up into discreet particles each carrying a quantum (or unit quantity) of energy. Instead of being submerged in a uniformly acting beam of light, which would affect each particle of the photographic film equally, the film is supposed to be subjected to a bombardment by individual light-darts which reach only here and there a grain and miss the intervening ones. Every grain, be it large or small, which is struck is fully exposed; those untouched remain unchanged. This is in fact the actual state as revealed by the microscope. Similarly Bridgman,³ by the use of the quantum theory, has been able to correlate the effects of the enormous pressures, to which in his experiments he has subjected various materials, to the corresponding effects of temperature. It is the quantum theory, again, which explains one of the most perplexing questions of modern physics, that of the varied structure of spectra, a subject elucidated by Foote and Mohler⁴ in their fundamental work on the 'Origin of Spectra.' The distinction between the Balmer series of lines in the spectrum of hydrogen and the so-called secondary spectrum is finely illustrated in an experiment⁵ by R. W. Wood. He

¹ *Phil. Mag.* (6) XLIV, p. 417.

² Paper before the Am. Physical Society at Toronto.

³ *Physical Review* (2) XIX, p. 114 (1922).

⁴ Monographs of Am. Chem. Soc. (1922).

⁵ *Phil. Mag.* (6) XLIV, p. 538.

confirms the accepted view that the former occurs when the hydrogen molecules are broken up into atoms and the secondary spectrum only when the gas is in the molecular state.

Filling the gap between ultraviolet light and X-rays.—It was definitely established some years ago that X-rays differ from light only in wave length. The gap, however, was enormous. Lyman, it is true, had extended the boundary of the known region of the ultraviolet to wave lengths somewhat under one thousand Ångström units. The longest known wave lengths of X-rays were, however, scarcely more than ten Ångströms. Within the year, however, Dember's demonstration of the existence of X-rays of several hundred Ångströms within the walls of vacuum tubes has been confirmed by several observers and Millikan's discovery of lines in the ultraviolet not exceeding 233 Ångströms has been strengthened by Hopfield's measurements of the oxygen spectrum.*

Luminescence of Incandescence, The.—Wide departures from the recognized laws of incandescence have been frequently ascribed to luminescence, i. e., to radiation due to some other agency than the disturbances brought about by temperature. With two or three exceptions, however, such statements have been based on assumption rather than on measurement. In two recent papers by Nichols and Howes it is shown that certain oxides when heated radiate selectively and at some definite temperature far exceed the brightness of a perfect radiator.[†] This extra glow, superimposed upon the ordinary temperature radiation has all the well known characteristics of luminescence. Luminous flames whose brightness is commonly supposed to be due to chemi-luminescence, are found by the same authors to be excited to increased brightness by violet and ultraviolet and reduced in brightness by the longer wave lengths of the spectrum.*

Audition, Advances in.—The physics of vision has always been more advanced than that of hearing and consequently the faulty eye has ever been better served than the ear. The quantitative analysis of sound has lagged far behind spectrum analysis and the measurement of the intensity of sound has been found more difficult than that of light. In the matter of aids to deafness the only important step since the invention of ear trumpets has been the introduction of microphones as amplifiers of sound. The advantage of thus magnifying sounds has, however, been largely annulled by distortions which render speech, thus enhanced, almost unintelligible. At the present time vacuum tube amplifiers, with their countless adjuncts of high ingenuity, extend the range of telephonic communication almost indefinitely. This has been accomplished by magnifying the complex wave systems which constitute speech without modifying the relative intensity of the overtones.

Amplification without distortion likewise greatly facilitates the accurate study of audition. It is now possible, as Donald MacKenzie[‡] has

done with his *alternation phonometer*, to balance tones differing in pitch and to say when they are of equal loudness. Thus he has been able to gauge the sensitiveness of the ear at different loudness levels throughout the entire audible range. The work just mentioned and such studies as Minton's¹⁰ "Physical Characteristics of Abnormal Ears"; Lane's¹¹ "Determination of the Minimum Sound Energy for Audition"; Crandall and MacKenzie's¹² "Analysis of the Energy Distribution in Speech"; Wente's¹³ "Electrostatic Transmitters for Measuring Sound Intensities" and Fletcher and Wegel's¹⁴ "Sensitivity of Normal Ears," all of which notable contributions have appeared within the current year, constitute a veritable renaissance in a neglected domain. We shall presently know as much about the ear and its needs as is now known about the eye and the practitioner will be able to prescribe for deficiencies of hearing with the same certainty as now does the oculist and to fit the ear with sound amplifiers as the eye is now fitted with glasses.

Application of Acoustics to the Measurement of Depths at Sea.—Some of the very delicate and ingenious methods which were developed during the war at the naval experiment station in New London, Conn., and which were primarily intended for the detection of submarines, are now finding useful and interesting applications in quite other fields. Dr. H. C. Hayes, for instance, in a paper read before the National Academy of Sciences on 16 Nov. 1922 describes the measurement of marine depths by means of the reflection of sound waves from the bottom. In shallow waters sounds produced at the stern of a vessel are caught at the bow after oblique reflection from the bottom of the harbor or channel. The detector used is one of the so-called "multiple-variable" receivers invented in the course of the naval experiments and given over to the public for general purposes. With these instruments the direction of a sound can be determined with great precision. The depth of the water is found from the angles of incidence and reflection of the sound waves. In this way it has been found possible to conduct a ship in a dense fog through the Bay of Fundy to St. Johns. The run was made without soundings and without any of the usual means employed by navigators under such circumstances. In deep water sound waves are sent vertically downward from the vessel and a set of standing waves are set up between the hull and the bottom of the sea. In this way estimations of depth are made which are said to equal the best of deep-sea soundings. The United States Navy and the Carnegie Institution of Washington are jointly exploring the bottom of the Pacific along our coast and southward, by this method, to determine the location and nature of the earth faults which cause such disasters as the recent earthquake and tidal wave along the coast of Chile.

* *Physical Review* (2) XX, p. 573; Nov. 1922.

† *Physical Review* (2) XIX, p. 300 (1922).

‡ Paper before the National Acad. Sc. (16 Nov. 1922).

* *Physical Review* (2) XX, p. 331 (1922).

¹⁰ *Physical Review* (2) XIX, p. 80.

¹¹ *Physical Review* (2) XIX, p. 492.

¹² *Physical Review* (2) XIX, p. 221.

¹³ *Physical Review* (2) XIX, p. 498.

¹⁴ *Physical Review* (2) XIX, p. 553.

Among some of the new books on Physics are: Aston, F. W., 'Idiotopes'; Bingham, E. C., 'Fluidity and Plasticity'; Bragg, W. H., 'The World of Sound'; Bridgman, P. W., 'Dimensional Analysis'; Carstow, H. S., 'Conduction of Heat'; Crehore, A. C., 'The New Physics'; Einstein, A., 'The Meaning of Relativity'; Fleming, J. A., 'Fifty Years of Electricity'; Foote and Mohler, 'Origin of Spectra'; Glazebrook, R. T., 'Dictionary of Applied Physics' (Vols. 1 and 2); Kaye, E., 'Practical Applications of X-Rays'; Kraus, C. A., 'Properties of Electrically Conducting Systems'; Mills, J., 'Within the Atom'; Price, E. S., 'Atomic Forms'; Sabine, W. C., 'Papers on Acoustics'; Silberstein, E., 'Theory of General Relativity and Gravity.'

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PHYTOGEOGRAPHY. See BOTANY.

PIEDMONT COLLEGE, a coeducational institution, founded 10 Sept. 1897 and located at Demorest, Ga. Though connected with the Congregationalists, it is, nevertheless, non-sectarian. In 1922-23 it had a faculty of 30 members, 265 students and property valued at \$550,000. No figures as to its income given. Frank E. Jenkins, D.D., is president.

PIERRE UNIVERSITY. See HURON COLLEGE.

PINE, John B., American lawyer: b. Dubuque, Iowa, 2 Feb. 1857; d. New York City, 28 Oct. 1922. Having received his bachelor's degree from Columbia University in 1877, he afterwards studied at the law school there, was admitted to the bar and had practiced in New York City since 1879. For 32 years he was a trustee of Columbia University and at the time of his death was secretary of the board. He was also attorney for the university. From 1907-09 he was a member of the Art Commission of the city of New York. He was a member of the New York Bar Association, and a manager of Saint Luke's Hospital, New York City. In 1908 he was made chairman of the committee on character, being appointed by the Supreme Court; was trustee of the American Academy in Rome; and trustee and founder of the University Settlement Society of New York. One of the founders of the Columbia University *Quarterly* and an editor after 1897, he had compiled a volume of historic university documents entitled 'Acts and Charters of Columbia University.'

PITTSBURGH, University of, a non-sectarian coeducational institution, located at Pittsburgh, Pa. It was founded as Pittsburgh Academy in 1787, in 1819 the name was changed to the Western University of Pennsylvania, and in 1908 the name was again changed to University of Pittsburgh. In 1922-23 it had a faculty of 608 members, 8,000 students, property valued at \$4,582,132.10 (cost less depreciation), and an estimated income of \$1,359,368. John Cabbert Bowman, LL.D., is chancellor.

PIUS XI (AMBROGIO ACHILLE RATTI) Pope: b. Desio, Italy, 31 May 1857. It was only when he died that the world seemed to realize what an important part Pope Benedict XV played in

its affairs. He was then proclaimed a great and good Pope. He ruled the Church in a most trying time. His constant effort was to lead men's thoughts away from strife and from the horrors of war. He did much to prepare the way for peace. He did still more to alleviate the sufferings of war's victims. When he died Mussulman, Jew and Greek united in this inscription on the pedestal of a statue erected to his honor in Constantinople: "To the great Pontiff of the world tragedy, Benedict XV, benefactor of the peoples without regard to their nationality or creed."

The world watched eagerly and waited anxiously for the election of the successor of this great pontiff. People had not ceased to mourn Benedict XV when, within two weeks, grief gave way to joy as Rome sent forth the news to the waiting world: "We have a Pontiff in the person of Ambrogio Achille Ratti, who takes the name of Pius XI." That joy was increased when later it was learned that he took the name of Pius because "Pius is the name of peace."

The press of the world knew but little of the new Pope. Hence it seized eagerly on two items: that the new Pope was a mountain climber; that the new Pope is a great scholar and linguist. There was much repetition of the story of his ascent of Monte Rosa, and writers enlarged on his love of the out of doors. Side by side with this, much was said of his love of books and devotion to research and his evidences of scholarship in the Ambrosian and Vatican libraries. Both showed the man: a man who could spend a lifetime in a library, examining, deciphering, cataloguing manuscripts; but at the same time a man who loved nature, who delighted in a hard climb and could spend a night on the mountain side. When his life was examined more closely we saw that in Poland and Milan he showed these characteristics. As the diplomat in Poland he evidenced knowledge of the Polish people and their history. He had besides the broader understanding that comes from sympathy with legitimate human aspirations. As priest and archbishop in Milan, he could leave his library to instruct little children, and his palace to interest himself in the settlement of a strike. Such is Pius XI: a man of profound learning, and a man of broad human sympathies.

Ambrogio Achille Ratti was the third of six children. One brother and one sister are still living.

F. Marion Crawford wrote: "Peasant and Prince have an equal chance of wearing the triple crown, but in history it will be found that it has been more often worn by peasants than by princes, and most often by men issuing from the middle classes." This is verified in the present case. The Ratti family is of the sturdy middle class from which most of the popes have come. His father was a weaver, but able to give his children a good education, even before Italian law made education obligatory. To Achille Ratti there came an exceptional opportunity. In Desio a town of 9,000 inhabitants about eight miles north of Milan, at that time there lived a priest, Don Giuseppe Volonteri, who conducted a private school. Don Giuseppe seems to have been a school-master

of unusual ability and a school-master of unusual methods. It is said, he accepted pupils for one year only. If at the end of that time they showed special talent he retained them. If not they were dismissed. As a consequence his school was in the best sense select. Achille Ratti was admitted and retained.

Under Don Giuseppe's guidance he laid the foundation deep and firm of a splendid education. The venerable priest also helped to mold his character and to turn his thoughts to ecclesiastical studies. So rapid was his progress that at the age of 10 he was able to enter the gymnasium of Saint Peter Martyr.

Achille Ratti did not forget his old teacher. When Don Giuseppe died in 1884 his former pupil then a priest in Milan went to Desio, preached the funeral sermon and wrote the epitaph for his teacher's tomb.

From the school at Desio the future Pope went to the seminary at Monsea, and later to the College of San Carlo in Milan. Thence he passed to the Seminario Maggiore, and at the age of 16 he went to Rome to enter the Lombard College and follow the courses of the Gregorian University. The Gregorian is a famous Jesuit University in Rome. It is attended by the students of the different national colleges as well as by members of religious orders. Amid the many students young Ratti soon distinguished himself, and received his degree in philosophy, theology and canon law. He was ordained priest in Rome on 20 Dec. 1879.

Father Ratti returned to Milan in 1882, and was appointed professor of theology in the diocesan seminary. In 1886 Monsignor Ceriani chose him as his assistant in the Ambrosiana Library. And in 1888 he was made member of the College of Doctors of the Library.

The Ambrosiana, founded in 1609, is one of the historic libraries of the world. It was meant to be not only a collection of books and manuscripts and a museum of the arts, but also a college of savants. In Monsignor Ceriani the future Pope met a scholar worthy of his surroundings. They worked together in harmony and to mutual advantage till the death of the monsignor in 1907. Father Ratti succeeded him, and was prefect of the Ambrosiana from 1907 to 1914.

During these years Father Ratti showed an enormous capacity for work, and devoted much of his time to a variety of interests. He was chaplain to the nuns of the Cenacle and found time for the instruction of the young, especially of the smaller boys who roamed the streets of Milan. He was mainly instrumental in organizing the school-teachers, and was interested in many efforts for social as well as religious betterment. In the meantime he became favorably known as a librarian abroad as well as in Italy.

He was now Monsignor Ratti. His work as prefect of the Ambrosiana necessitated his going to Rome, from time to time, for research in the Vatican Library. Pope Pius X was impressed by the industry and ability of Monsignor Ratti and wished to have him in Rome for the Vatican Library. Monsignor Ratti was not anxious to leave Milan. But when the Pope insisted he first assisted and in 1914 succeeded Father Ehrle, S. J. (now Cardinal Ehrle), as prefect of the Vatican Library. For two years

he divided his time between Rome and Milan, but finally he was persuaded to devote himself entirely to the Vatican Library.

This was not an easy task during the war. Men of different nationalities and sympathies had access to the library. Books and documents were eagerly searched for a word in favor of one side or the other. With admirable tact and prudence the prefect avoided favoring or offending either side.

In the meantime Benedict XV had ascended the Papal throne. He soon discerned in Monsignor Ratti qualities that marked him for other work than scholarship. His linguistic ability, his calm judgment of men and affairs, his scholarly habit of weighing well his words, of thinking before acting, indicated other fields of usefulness. Benedict XV was a keen judge of men, and he estimated accurately the capacity of his librarian.

About that time ecclesiastical affairs in Poland caused no little anxiety at the Vatican. Russian invasion and German offensive had wrought havoc and reduced the people to misery. Russia had now collapsed; the German army occupied Russian as well as German Poland. The spiritual needs of the people called for immediate action. Numerous Sees were vacant or suppressed. Yet little could be done without offending the sensibilities of the Germans or the national aspirations of the Poles. To get first hand information, the Pope determined to send an apostolic visitor to Poland, and he selected Monsignor Ratti for the post. The appointment is dated 25 April 1918.

While the Polish mission had no political significance it was generally acknowledged to be a difficult one. It was particularly difficult for a man not experienced in diplomacy. But Monsignor Ratti approached his task not as a diplomat but as a priest. He insisted that his mission was ecclesiastical. He came to provide for the spiritual needs of the people. This he did with such tact that he won the confidence of the Poles and the respect of the Germans.

With the Armistice came new problems. Poland was once more an independent nation. Monsignor Ratti was made Nuncio, and consecrated archbishop in the Cathedral of Warsaw, 28 Oct. 1919. There were difficulties pressing for solution. Some German bishops resigned and their places had to be filled. The Church had to be organized almost anew in former Russian territory. Amid these difficulties revolution broke out, followed by Bolshevik aggression. There was a popular movement for the division of landed estates. The churches possessed lands and were immediately affected. Archbishop Ratti solved these difficulties. He organized the dioceses in a way that won the approval and gratitude of the Polish nation. He stood by Poland when the Russian Reds were hammering at the gates of Warsaw, and by word and example helped to bring to Poland a most remarkable victory. He met the popular demand for division of the land by conceding the principle and assenting to division of the Church lands, provided the Holy See was consulted.

On the occasion of the famous plebiscite in Upper Silesia the Papal Nuncio was appointed high ecclesiastical commissioner at the request

of Germany, Poland and the Inter-Allied commission. Passions ran high in those days. Each faction accused the other of intimidation and fraud. Yet the Nuncio fulfilled his task with a firmness and a fairness that won the approval of all. And in the midst of the turmoil he was able to bring about the liberation of many who had been held prisoners by the Bolsheviks.

It was on account of his success in Poland that Archbishop Ratti was made cardinal in a secret consistory 13 June 1921, and appointed to the See of Milan, his native diocese. On that occasion, speaking of Cardinal Ratti, Pope Benedict said: "Behold the students of the schools of diplomacy bowing before the former prefect of the Ambrosiana Library of Milan, and of the Vatican Library of Rome, praising the zeal with which he always favored them in their search for the hidden treasures in ancient documents; behold these students of diplomacy, and with them their masters, bowing also before the Apostolic Nuncio of Poland who with firmness and yet with exquisite tact and imperturbable calmness has known how to establish concord between the State and the Church in times that were most difficult and under circumstances most dangerous."

Less than a year after these words were spoken the Cardinal was elected successor of the Pope who spoke them. The election took place 6 Feb. 1922 and the coronation on 12 February following. Most people will subscribe to the words of Cardinal Bonzano, then Apostolic Delegate to the United States, "With erudition he combines an experience in practical affairs obtained under most trying circumstances. He thus brings to the Papal throne those qualities most needed at the present time for the government of the Church. We may be sure that under our present Holy Father the Church throughout the world, and especially in America, will reach a high degree of prosperity and continue the work of pacification."

References: *America* (11 Feb. 1922); *The Tablet* (11 February and 18 March 1922); *The Catholic Historical Review* (April 1922); *Acta Apostolicae Sedis* (February 1922, no. 5).

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PLANT INDUSTRY, United States Bureau of. The Bureau of Plant Industry conducts those features of the work of the Department of Agriculture which have directly to do with the production problems of all plants except forest trees. Its work covers a wide range of activities, including the investigation of the causes of all plant diseases such as those affecting fruits, forest and ornamental trees and shrubs, cereals, cotton, truck and forage crops and tobacco; the breeding of improved and disease resistant varieties of these and other crops, the prosecution of agricultural exploration work in foreign countries, and the introduction to this country for testing of such foreign seeds and plants as promise to possess economic or ornamental value under our conditions. It investigates, both in laboratory and field, problems of soil fertility, including the determination of the relative and actual value

of fertilizing materials and other soil amendments; methods of culture of various crops, including the determination of crop rotations best suited to the less thoroughly understood dry land and irrigation agriculture of the semi-arid and far Western regions; the cultural inter-relationships of crops involved in crop successions and numerous physiological problems requiring solution in the effort more fully to understand the biological processes involved in plant growth and fruition. Special attention is paid to problems encountered in the development of new plant industries in various parts of the country. Considerable attention is devoted to investigations looking toward more effective utilization of perishable crops, such as vegetables and fruits, to the end that effective methods of conserving temporary surpluses of production may be developed, thus preventing waste of valuable raw products and reducing the even more destructive results to the producer, from the financial standpoint, of excessive gluts of such products.

In addition to the research activities, which constitute the chief portion of its work, the Bureau is charged with the conduct of three large scale cooperative service activities having to do with the eradication or control, through practical measures, of three destructive plant diseases which have proved serious in certain parts of the country. These are the bacterial disease of citrus fruits known as citrus canker, which is being eradicated from the commercial citrus districts of the five Gulf States; the white pine blister rust disease, which menaces the growing stands of this valuable timber tree in the New England and Great Lakes States, the control of which, in the sections where pine has attained the status of a commercially important crop, is being accomplished through the eradication of both wild and cultivated bushes of the several species of *Ribes* (currants and gooseberries) which constitute the host plants that transmit the disease from pine to pine; and the control of the black stem rust of wheat and other cereals which in occasional years, when climatic conditions favor, develops in epidemic form, working serious damage, especially in the great interior winter wheat and spring wheat regions of the Mississippi Valley and Northern Great Plains. This last is being brought under control by eradicating the common barberry bush from that region, it being the host plant responsible for that early start of the disease in the spring which makes the destructive epidemics of black stem rust possible in certain seasons.

The work of the Bureau is organized on the project basis, comprising at the present time some 125 group projects which cover some 325 distinct phases of work. The appropriations for the work of the Bureau for the fiscal year 1923 total approximately \$3,770,000, of which approximately \$2,500,000 is devoted to research; \$860,000 to service work, and the remainder to such features as \$40,000 for specific extension work on the government reclamation projects; \$10,000 to regulatory work (administration of the Import Seed Law); and \$360,000 for the purchase, packing and preparing for distribution of vegetable and flower seeds allotted to

Senators and Representatives under a mandatory appropriation, generally known as the Congressional Seed Distribution. The personnel comprises approximately 1,700 permanent employees, about one-third headquartered in Washington and two-thirds at various points in the field, mostly at independent or cooperative field stations, at locations where suitable soil and climatic conditions for the study of the special problems under investigation are found. Approximately 900 of the personnel are scientifically and technically trained men. The work is administered by the Chief and Associate Chief of Bureau and an Assistant in Charge of Business Operations, the specific research and service projects being organized on the group plan, each with a trained and experienced specialist in charge. The new publications of the Bureau issued during the fiscal year 1922 numbered 127, containing 3,114 pages, 280 full-page plates and 627 text figures, issued in first editions aggregating 1,165,650 copies. These comprised department bulletins, farmers' bulletins, circulars and miscellaneous documents, with contributions to the Department "Yearbook" and to the *Journal of Agricultural Research* covering a wide range of subjects. Outside publication in technical journals of a large number of technical articles by the specialists of the Bureau staff occurred during the year.

Some typical instances of results of the research work of the Bureau are:

Soil Permeability.—It has been demonstrated by investigational work, both in the laboratory and in the field, that the permeability of the soil to water is influenced by the quality of the irrigation water with respect to its dissolved salts. When the dissolved salts are chiefly salts of calcium and magnesium, the effect on the soil is to keep it permeable to water and thus to prevent the accumulation of salts in harmful quantities if sufficient irrigation water is applied to leach the surface soil, at least occasionally. On the other hand, if the dissolved salts in the irrigation water are chiefly salts of sodium, the effect on the soil is to make it colloidal, in which condition it absorbs water so slowly that the leaching out of the dissolved salts is difficult or impossible. In the light of these results it has been possible to recommend the treatment of irrigated land to prevent injury when the irrigation water is deficient in calcium and magnesium salts and to correct conditions of impermeability that have developed.

Soil Solutions.—In the field study of the comparative effects of different crop plants on the yields of other crops following in the rotation, some notable differences have been obtained in the "carry over" or residual fertilizing effects of hairy vetch, crimson clover, cowpeas, and soy beans on the small grains when tobacco, potatoes, and corn are the intervening crops. Moreover, in these and in other cropping combinations the generally unfavorable effect of corn, as compared with potatoes and tobacco, on the yields of crops following in the rotation has been a striking feature. These "crop effects" do not seem to be fully explainable on the basis of relative draft on the soil's supply of plant-food elements. For example, the tobacco crop removes much larger quantities

of the plant-food elements than the potato crop, but better yields of potatoes are obtained after tobacco than after potatoes themselves.

Magnesium Deficiency.—In further work on the significance of magnesium as a constituent of fertilizers for tobacco and other crops it has been found that corn, like tobacco, develops characteristic pathological symptoms on certain soils when magnesium is omitted from the fertilizer. It has been discovered also that a proper balance between the supply of magnesium and sulphur in the fertilizer or soil is a factor of importance in plant growth and that this balance is likely to be greatly affected by the amount of the seasonal rainfall. In relatively dry seasons symptoms of sulphur deficiency are more evident, while in wet seasons magnesium deficiency becomes more acute, probably because of the sulphur brought into the soil by rain in conjunction with the loss of magnesium by leaching. As a result of field-plat tests carried out in most of the important tobacco-growing sections, in which chemically pure salts were used instead of the usual commercial-fertilizer materials, it has become evident that under certain conditions magnesium deficiency may result in serious damage to tobacco, even on newly cleared land, and the crop is subject to injury from this cause in various localities. It has been demonstrated that the necessary quantity of magnesium for correcting this deficiency may be readily supplied by using in the fertilizer potash salts containing appreciable quantities of magnesium or by the application of magnesium limestone to the soil. It is obvious, therefore, that the element magnesium must be taken into account both in the general problem of liming and in the proper choice of commercial-fertilizer materials, particularly in the use of highly concentrated fertilizer formulas.

Effect of Borax in Fertilizers.—Investigations of the effect of borax on different crops and in different quantities under a variety of soil conditions and climatic factors have been concluded. The results show that the injuries reported during the war were primarily due to the borax contained in the fertilizer in proportions exceeding .10 pounds per acre, although in many experiments much smaller quantities often caused some of the symptoms of borax poisoning to appear. Under moist soil conditions or rains following the application of the fertilizers the effect of the borax is much less than where dry conditions obtained. The potash sources which carried this borax into the fertilizers are now so purified that the quantity of borax contained in them is negligible. The elimination of borax from fertilizers to a safe limit has been accomplished, and no further damage need be feared from this source.

Citrus-Canker Eradication.—As a result of the vigorous campaign conducted by the Gulf States in cooperation with this Bureau it was thought that the bacterial disease of citrus trees known as citrus canker had been completely eliminated from areas of commercial citrus-fruit production, but this canker was again discovered in Florida on 20 May 1922, in a grape-fruit orchard in an isolated citrus section near Davie, and since that time 14

near-by properties have been found infected, with a total of about 750 trees. Since the disease is easily spread from orchard to orchard by workmen engaged in cultivating or picking, a rigid inspection is necessary, and a large corps of men experienced in canker control is now at work in Florida.

In addition to this outbreak in Florida a few infected spots were found in Alabama and Mississippi, which emphasized the necessity of continuing the inspection work on a more adequate scale. Louisiana has apparently eradicated canker from the commercial producing area, but many scattered, infected trees are being found in isolated places. Effective eradication activities are now under way in Texas, and it appears that by far the larger part of the infected trees have been located and destroyed. Occasional outbreaks of canker occur in the lower Rio Grande Valley and at present major efforts are being devoted to the thorough eradication of canker from the entire Rio Grande district.

White-Pine Blister Rust.—The outstanding feature of the white pine blister-rust situation during the past year was the discovery of this destructive disease in southwestern British Columbia and the Puget Sound region of Washington. This bureau, in co-operation with State and Canadian authorities, has taken prompt action to determine the extent of the infected area and, if possible, to control or eradicate this new outbreak of the disease. The age of infections found on pine trees proves that the disease was present in British Columbia in 1916, prior to the enactment of the Canadian blister-rust quarantine, and the rust has extended its range into the State of Washington.

The appearance of the blister rust in the Northwest directly menaces seven different species of five-needled pine that are native to the Rocky Mountain and Pacific Coast States, all of which are susceptible to the white pine blister rust. The present total merchantable stand of Western white and sugar pine, the principal commercial species, is estimated at over 57,000,000,000 board feet, with a stumpage value of \$228,400,000, about half of which is owned by the Federal government. Even more important from the standpoint of future forest production are the 12,000,000 to 13,000,000 acres of second growth in which Western white and sugar pine will form an important part of the timber crop.

Barberry Eradication.—The campaign for the eradication of the common barberry in order to control the black stem rust of wheat was begun in the spring of 1918 and is now in its fifth year. The eradication area comprises 13 of the north-central wheat-growing States, namely: Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin and Wyoming. All of these States now have enacted legislation requiring the removal of common barberry bushes. The campaign is conducted in co-operation with the State agricultural college in each of the States, with the State department of agriculture in most of them, and with the Conference for the Preven-

tion of Grain Rust. Investigations of the time, rate, and manner of spread of rust from barberries, made during the summer, give additional evidence of the enormous losses directly traceable to individual bushes and hedges.

From the beginning of the campaign to 30 June 1922, almost all cities, towns, and villages in the 13 States included in the eradication area were surveyed. The original survey has been completed in Montana, Colorado and Wyoming and a resurvey made for finding and eradicating sprouts and seedlings appearing since the original survey was completed. In the other 10 States the original survey has covered an area of approximately 330 counties. A resurvey of each property on which barberries have been found is being carried forward and areas in the vicinity of large hedges or large bushes, either cultivated or escaped, which are old enough to bear seeds have been designated for a more careful resurvey.

During the entire campaign a total of 5,625,289 bushes has been located on 50,287 properties. Of these, 3,296,378 were escaped areas in the States of Wisconsin, Illinois and Michigan. These areas cannot be cleared immediately because of their extent and the difficulty of eradication.

Sugar Cane Mosaic.—Mosaic has been found on sugar cane in each of our cane States, and every field has been inspected and the degree of infection, if any, has been determined and recorded. Some of the States are co-operating in the control of the mosaic in the cane areas. The disease has been reduced practically to the point of elimination in parts of Porto Rico and in the eastern and peninsula part of Florida, where the roguing advocated by the Bureau has been practiced according to directions. The immune variety of cane, Kavangire, imported by the Bureau from Argentina in 1919, is being rather generally planted in Porto Rico and in badly diseased areas promises to displace the susceptible varieties.

Potatoes.—From the high Andes of Colombia and Ecuador a considerable series of interesting potatoes has been introduced for the use of North American plant breeders who are working with this crop. This series includes a number of varieties of the "chaucha" group, a very early maturing type from Ecuador; the yellow-fleshed potato, a variety of remarkably rich flavor from Colombia; and one or two wild forms closely allied to the cultivated potato and of possible value for hybridizing with the latter.

About 5,000 new potato seedlings obtained in the breeding work are under test, together with a considerable number of the most promising selections made from earlier breeding work. In this phase of the work the difficulty is to get in a single combination high yield, high table quality, resistance to disease, and the other important characteristics of shape, smoothness of surface, etc. In many instances seedlings that are highly resistant to disease have proved to be light-yielding sorts and have lacked in table quality or in some other particular, while other seedlings which have had great promise in some other line have proved susceptible to disease. The work is continued in the expecta-

tion that through a combination of varieties or seedlings having desirable characteristics in the largest degree seedlings will eventually be secured in which these characteristics are all combined in a satisfactory measure.

Cotton.—Experience with cotton has shown that the utilization of superior varieties is a fundamental problem, requiring careful study. On account of the present organization or lack of organization in the cotton industry, most of the seed is inferior, and there is no assurance of any general utilization of good varieties. Methods of breeding and acclimatization have been developed and demonstrated, but other requirements must be met if a full utilization of superior varieties is to be secured. The discovery and development of a series of superior varieties, including Lone Star, Trice, Columbia, Meade, Durango and Acala, make it possible to place the different regions of the Cotton Belt on new planes of improved production, and all these varieties are being grown as extensively as the available supplies of good seed will permit; but the inadequacy of the present systems of providing annual supplies of planting seed is also being recognized and methods of improvement devised. Efforts are being made, therefore, to avoid the general mixing of seed at the public gins and the crossing of the different varieties in the fields, which undoubtedly are responsible for the rapid and general deterioration of seed stocks that tend to keep our producing industry on a low plane of efficiency.

Red Clover.—Tests have been continued to determine the value of imported red-clover seed. Field tests were carried on co-operatively with the agricultural experiment stations of Wisconsin, Michigan, Ohio, Pennsylvania, Tennessee, Idaho and Oregon, as well as with individual farmers in these States and at the Arlington Experiment Farm. The results obtained confirm previous conclusions and establish beyond doubt the fact that red-clover seed imported from Italy is not reliably hardy north of the Ohio River. At Arlington it was also found that while the imported red clovers passed the winter without appreciable mortality, a large percentage of the plants died after the first cutting the following season, while plants from domestic-grown seed made a vigorous second growth.

Wheat.—Two new wheats developed in the breeding experiments in co-operation with the agricultural experiment station of Cornell University have been named Forward and Honor. These now are being grown commercially, and seed is offered for sale by seedsmen and farmers in New York State. A mass selection of the purple straw variety developed at the Arlington Experiment Farm is being widely grown in eastern North Carolina and is giving good results.

Kota, a bearded, hard red spring variety, discovered in 1918 to be especially resistant to stem rust, was grown in 1921 at 30 experiment stations to determine its value in comparison with adapted commercial varieties of both common and durum wheats. During the past three years its resistance to stem rust has proved nearly equal to that of the most resistant durum varieties. The commercial stocks of Kota seed

were increased to about 6,000 bushels in 1921, and nearly all of this was sown in 1922.

Durum wheats have continued to outyield common wheats, including Marquis, in the spring-wheat belt of the northern Great Plains and prairie areas. Some of the high-yielding rust-resistant durum varieties developed co-operatively by this department and the State agricultural experiment stations unfortunately do not produce a first-class quality of macaroni and other alimentary pastes. Preliminary experiments show, however, that Arnautka, Kubanka, Peliss, and Mindum make semolina products of satisfactory quality. The acreage of Kubanka has been rapidly increasing throughout the durum-growing sections, because it is more rust resistant than Arnautka. Peliss has been increased in Montana and Mindum in Minnesota.

Grapefruit.—Because of the fact that the great bulk of the grapefruit crop is marketed during a comparatively short period and because of certain serious difficulties which have been experienced in holding this fruit in cold storage, considerable work has been done in an effort to determine satisfactory methods of handling the fruit and to learn the limits of storage. Successful storage obviously has large possibilities, in view of the fact that by holding the fruit in cold storage for a considerable length of time the marketing period would be extended, thereby making grapefruit available to the consumer over a longer period and at the same time tending to eliminate gluts in the market which are likely to result from the present necessity of disposing of the crop in a limited time.

The results of the work have been very promising. The procedure has been to procure fruit from individual trees at different times and to handle comparable lots differently, both during the pre-storage period and while in storage. Chemical analyses of the fruit have been made from time to time in order to determine the biochemical effect of different methods of handling and storing, as well as for the purpose of gaining information in regard to the biochemical processes that go on in different fruits from the time they are harvested until they are consumed. The chemical analyses show that grapefruit behaves very much like deciduous fruits when in cold storage so far as chemical changes are concerned. The acids seem to break down, while the sugar content remains about the same. In warm storage, however, the sugar seems to disappear and the acids to increase to some extent. One of the serious problems in the storage of grapefruit is the development of what is commonly called "pitting." This is the breaking down of certain cells in the skin of the fruit which results in the formation of brown-colored pits that may be very numerous and may increase in size until many of them coalesce. This produces a very unattractive appearance. It has been determined as a result of this line of work that grapefruit cured at a temperature of 60 degrees to 65 degrees F. in a humidity of about 55 per cent, the curing being continued from 10 to 20 days, and then placed in a storage temperature of 32 degrees F. may be kept in good

condition for two months, thereby materially extending the marketing period. Fruit so handled does not suffer from pitting and comes from storage in an attractive condition with excellent dessert quality.

Bud Selection.—Several outstanding and important facts have been brought out clearly during the past year in connection with the investigational citrus progeny performance-record work. Buds taken from the normal branches of the parent tree where that tree has a sporting branch or branches bearing abnormal fruits or foliage produce trees which have been found to be extremely variable and undesirable for commercial propagation. In other words, parent trees which have sporting branches as the result of bud variation have been found to be undesirable for propagation, even though the buds for propagation are taken from the normal branches of such trees. The variable branches in the trees indicate inherent instability. On the other hand, buds taken from productive and normal trees bear fruits uniformly good and without marked deviation from the normal type of fruits and foliage. This discovery, confirming similar investigations during previous years, has demonstrated that in the selection of parent trees for propagation it is essential that only those trees which produce uniformly good fruits be used.

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PLANT PATHOLOGY. See BOTANY.

PLANT PHYSIOLOGY. See BOTANY.

PLATINUM. During the first nine months of 1922 the imports of crude and unmanufactured platinum amounted to 72,410 ounces, which is nearly 11,000 ounces more than the imports during the whole of 1921. Colombia supplied about half the crude platinum that reached the United States, and some Russian platinum came in through England and other countries. As the domestic supply of platinum and related metals is now almost completely dependent on imports it is reasonable to expect a considerable increase in the quantity of new metals recovered by refiners. Stocks of platinum at the beginning of the year were about normal, amounting to 64,547 ounces. As the jewelers had a better year in 1922 than in 1921, the recovery of secondary metals was estimated at least 50,000 ounces. James M. Hill, of the United States Geological Survey, therefore estimated that about 200,000 ounces of platinum metals were available for consumption in 1922. The large supply was reflected in the price of refined platinum, which throughout most of the year was from \$87.50 to \$90 an ounce but which early in the fall advanced to \$108. Palladium remained at \$55 to \$60 an ounce without fluctuation. The price of iridium was fairly regular at \$160 to \$175 an ounce until fall, when a shortage of supply caused a considerable advance in price.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. An organization founded in 1906 in the interest of the children who because of the rapidly growing cities and towns were fast being driven into the streets to play. It was a move to bind to-

gether in a national movement the efforts growing up in various parts of the country to provide children with places where they could have real play and safe play. From this beginning the Association has grown into a nationwide work in promoting public recreation for people of all ages and a clearing house for information on all phases of the recreation movement. The principles on which the work is based are these:

1. Wholesome recreation is a community responsibility just as education and health are. It should, therefore, be administered by the municipality and supported through taxation.

2. Recreation should be conducted the year round. There should, therefore, be playgrounds and neighborhood recreation centers open throughout the year in schools and other meeting places, and community recreation activities of all kinds in which all the people can participate.

3. Leadership is the most important factor in recreation. There should be at the head of a municipal system a secretary or superintendent of recreation with assistants employed throughout the year.

4. There must be an official body in charge of the system.

Through its field secretaries this organization helps cities to conduct campaigns for municipal appropriations for recreation and to organize systems of recreation. Through its employment service officials in charge of recreation departments are put in touch with workers and through its information service cities not only in all sections of this country but in all parts of the world are given information. An important part of the work in recent years has been the National Physical Education Service maintained in Washington to promote State and Federal legislation for compulsory physical education in the schools.

The Association has its headquarters at 315 Fourth Avenue, New York City, and its officers at the beginning of 1923 were: President, Joseph Lee; first vice-president, John H. Finley; second vice-president, William Kent; third vice-president, Robert Garrett; treasurer, Gustavus T. Kirby; secretary, Howard S. Braucher.

PLUMB, Glenn Edward, American lawyer: b. Clay, Washington Co., Iowa, 1 Sept. 1866; d. Georgetown, D. C., 1 Aug. 1922. After taking the degree of Ph. B. at Oberlin College in 1891, he studied at Harvard Law School 1891-92 and took the degree of LL.B. in Northwestern University in 1893. He was counsel for the city in *Blair vs. City of Chicago*, known as the "99 year case." In 1919 he went to Washington to urge upon Congress the plan for tripartite control of the railways of the country, placing them under a commission of 15, five to be railway employees. In 1920 he offered to Congress a plan for all American industries modeled after the Plumb plan for the railroads. The Plumb plan had wide publicity. About seven years ago Mr. Plumb was retained by the railroad brotherhoods to represent them in wage negotiations of the locomotive engineers in which the values of certain railroad properties were in question; and on several other occa-

sions in after years he acted as counsel for the brotherhoods.

PLUM CURCULIO. See ENTOMOLOGY, UNITED STATES BUREAU OF.

POISON GAS, Use of. See WASHINGTON CONFERENCE.

POLAND, a republic of Europe, formerly partitioned between Austria, Germany and Russia. Capital, Warsaw.

Geography, Area, Population, Religion.—The ancient Polish State was reconstructed as a result of the World War. It comprises the territory formerly divided among Austria-Hungary, Prussia and Russia after the three partitions of Poland in 1772, 1793 and 1795. Its boundaries have been defined as regards Germany and Austria-Hungary by the treaties of Versailles and Neuilly, and the Boundary Commission, acting under these treaties. As regards Russia, the boundary on the east was laid down in general terms by the Treaty of Riga (signed 18 March 1921). A boundary treaty with Lithuania was negotiated also in 1921, while in Upper Silesia the Supreme Council of the League of Nations defined the boundaries there in the autumn of 1921.

According to these several treaties, awards, etc., Poland has an estimated area of 149,042 square miles. Of this area "Congress Poland," (the part granted to Russia by the Congress of Vienna 1815) has the greater number of inhabitants as the table shows:

Congress Poland.....	12,789,226
Galicia.....	8,257,505
Former Prussian Poland.....	3,225,618
Territory ceded by Russia by Treaty of Riga....	3,683,568
	<hr/> 27,955,717

The density of population in the whole country in 188 per square mile. The racial percentage is as follows: Poles, 65.3 per cent; Ukrainians, 16.7 per cent; Jews, 7.4 per cent; Germans, 5.2 per cent; White Russians, 3.1 per cent; Ruthenians, 0.5 per cent; Lithuanians, 0.4 per cent; Aborigines, 0.6 per cent; others, 0.8 per cent. The latest table of vital statistics gives for one year: 172,144 marriages; 898,819 births; 488,193 deaths; surplus of births over deaths, 410,626.

Before the war great numbers emigrated chiefly to the United States, where, it is estimated, that the Polish population is about 4,000,000.

The chief cities of Poland, with their populations in 1921, are as follows: Warsaw, the capital, 931,176; Lodz, 451,813; Lwow, 206,113; Vilna, 205,000; Cracow, 176,463; Posen, 156,691; Sosnowiecz, 86,452; Czestochowa, 81,823; Bialystok, 76,971; Lublin, 99,917; Radom, 61,627; Kattowitz, 45,422; Bromberg, 57,696; Przemyśl, 54,078; Grodno, 34,916; Kalisz, 44,753; Thorn, 39,419, and Kielce, 41,357.

Religion.—The Roman Catholic is the dominant religion of Poland; having 66.8 per cent of the population within its fold. Greek Catholics number 12.1 per cent; Greek Orthodox, 9.3 per cent and Jews 11.0 per cent.

Political Life.—The provisional legislature of the Republic of Poland was elected 26 Jan. 1919 and met for the first time on 10 February following. There was no foundation of law

and government, no constitution and no provisional organization.

It was necessary to provide for the whole country a new constitution. But before that was enacted the legislature, through itself assuming the sovereign power, entrusted Joseph Pilsudsky with the office of Chief of State and commander-in-chief of the armed forces. The constitution was finally adopted 17 March 1921 and is considered one of the most democratic and liberal in the world (for text see *New York Times Current History* for May 1921, Pages 358-367). In the meantime steps have been taken to co-ordinate the organization of the three parts of Poland by creating new territorial divisions (Wojewodztwo) and by giving these a reasonable measure of home rule.

The Polish Legislature at once began to democratize the franchise and to introduce a unitary system of organization. A commission was appointed to draw up a Polish system of law in place of the four systems prevailing, the Austrian Civil Code of 1811, in the Austrian part; the German Civil Code of 1896 in the German part; the Code Napoleon in Russian Poland around Warsaw (the Congress Kingdom) and the Russian Civil Law in other parts of Russian Poland. The commission of codification, composed of leading professors, judges and practicing lawyers, has been holding frequent meetings and is working out a new legal code.

Education.—Elementary instruction has been made compulsory in the whole of Poland. A law was also passed organizing on a liberal basis the universities and other academic schools. There are in Poland five universities, two polytechnic schools, a mining academy, two veterinary academies, two agricultural academies, an academy of forestry and two academies of commerce. The system of secondary schools was unified and laws have been passed fixing in a liberal way the status and income of professors, teachers, judges and other public servants.

Relations with Neighbor States.—In the early months of 1922 relations between Poland and Soviet Russia were marked by charges and counter charges of support of hostile propaganda. Poland, 8 Nov. 1921, in a note to Moscow, demanded that the terms of the Riga Treaty be finally carried out. Drastic anti-communist legislation was enacted the same month. Poland and the Free City of Gdansk signed an agreement on 25 Oct. 1921, under which goods between Poland and Gdansk now circulate freely back and forth under a common customs regime. On 7 Nov. 1921 a treaty was signed with Czechoslovakia, each nation guaranteeing benevolent neutrality in case the other was attacked. The relations with Rumania and France are fraternal.

Defense.—On 10 Jan. 1922 the Minister of War presented a bill in Parliament for a peacetime army of 250,000 men, deemed by him necessary in view of Poland's lack of strategic boundaries, exclusive of the Carpathians in the South. The army was increased to 300,000 on 18 Aug. 1922.

Economic Life.—Poland has large mineral deposits, but the main production of the country

is agricultural. Most of the land in Poland—iron 60 to 70 per cent—belongs in free hold to owners whose shares do not exceed 200 acres and are sometimes as small as a quarter of an acre. The remainder forms estates and belongs to the State, to various public and private corporations and to private individuals. Since the population is very dense (188 to the square mile) there is a strong demand for land. According to a statute of 1920, large estates are to be broken up, leaving a prescribed maximum for individual cultivation, the rest being sold in small plots.

About 85 per cent of the total area of Poland is productive. Of the productive area, about 25 per cent is forest. All forests are the property of the State. A livestock census of a few years ago showed 2,847,000 horses, 6,918,000 cattle, 2,389,000 sheep and 5,185,000 pigs.

The six chief crops of Poland are wheat, rye, barley, oats, potatoes and sugar beets. The production of each of these during 1922 exceeded the production of 1921, according to figures made available by the Polish Chief Statistical Office.

The following table shows the principal crops of Poland in 1922 compared with 1921.

Crops	Area sown		Total yield ¹	
	1921	1922	1921	1922
	Hectares ²	Hectares	Metric tons	Metric tons
Wheat.....	846,920	1,037,200	960,222	1,150,000
Rye.....	3,512,474	4,380,700	4,247,508	5,132,000
Barley.....	991,725	1,113,600	1,160,598	1,297,000
Oats.....	1,923,800	2,314,300	2,174,188	2,655,000
Potatoes.....	1,951,300	2,146,400	15,040,900	19,102,900
Sugar beets.....	79,600	106,000	.....	1,549,600

¹ Exclusive of Polish Upper Silesia.

² One hectare equals 2.47 acres.

Uncultivated land in 1922 was estimated at 370,000 hectares (of which 300,000 was in the eastern districts, 40,000 in Congress Poland, and 30,000 in Galician Poland), as against 1,130,000 in 1921 and 2,500,000 in 1920.

Industry.—Warsaw, Lodz, Cracow, Czeszochowa and Dabrowa are the great industrial centres of the republic. Poland produced 6,408,664 tons of coal in 1920 and 250,000 tons of brown coal. Ore production totaled 820,000 tons in 1920. Eight furnaces have a capacity of 10,000 tons of iron and steel monthly. Mineral salt was produced in 1920 to the extent of 282,673 tons. Rock oil production has fallen off in recent years in Galicia, being only 831,703 tons in 1919 and 764,818 tons in 1920. The textile industries employ 46,000 hands in 485 factories with 750,580 spindles and 12,922 looms. Paper manufactures of various grades are important, especially the paper-bag products. In 1922 Poland produced 713,100 metric tons of petroleum as compared with 704,874 tons in 1921 and 765,004 tons in 1920.

Commerce.—During the first six months of 1922 the volume of Polish exports increased materially, reaching 61 per cent in weight of the volume of imports as against 42 per cent for the entire year 1921. It is substantially certain that exports gained also in value relatively to imports. However, only since 1 Jan.

1922, have statistics of the values of exports and imports been available. For the first six months of the year, imports were valued at 223,804,000,000 Polish marks and exports at 100,108,000,000, the latter being equal to 45 per cent of the former. The excess of imports (124,000,000,000 Polish marks) was met chiefly by remittances to Poland from emigrants abroad and in part by foreign credits accorded against the security of Polish property. On applying the average monthly rate of exchange to import and export values for each month, the above import values amount to \$58,164,000 and the exports to \$25,810,000.

The following table compares the quantity of Polish imports and exports by half-yearly periods from January, 1920, to 30 June 1922:

ITEMS	First half year	Second half year	Total year
1920:	(tons)	(tons)	(tons)
Imports.....	1,907,992	1,621,819	3,529,811
Exports.....	209,109	411,183	620,292
1921:			
Imports.....	2,470,190	2,427,803	4,845,046
Exports.....	878,317	1,149,821	2,028,044
1922 (first half):			
Imports.....	2,313,149	(¹)	(¹)
Exports.....	1,415,695	(¹)	(¹)

¹ Figures not yet available.

Finance.—The total expenditures of the Polish government in 1921 amounted to \$115,000,000 and those of the first six months of 1922 to about \$65,000,000 (on basis of 1 Polish mark = 1/20 of one cent in 1921 and 1/40 of one cent during first six months of 1922).

This decided improvement in the budget situation was due chiefly to the collection of the extraordinary direct taxes known as the "budget balancing contribution." Of the total receipts from all sources (191,458,000,000 marks) about three-fourths (146,864,000,000) were from taxes, and of these taxes, two-fifths (58,473,000,000) were from the extraordinary contribution. However, there was also a considerable increase in the revenues from indirect taxes and monopolies. The revenue from these sources during 1921 had been 41,386,000,000 marks, while during the first six months of 1922 it amounted to 67,781,000,000—or, after allowing for the decline in the value of the currency, a sum equal to about four-fifths of that for the 12 months preceding.

The Polish financial situation during the latter six months of 1922 was extremely unsatisfactory. Internal political conditions prevented the passage of needed tax legislation. The extraordinary contribution had been a once-for-all levy, with no provision for repetition. While about 80 per cent of the entire sum expected from this source was actually collected the bulk of the collections had fallen during the first half year.

No official statistics of actual expenditures and receipts subsequent to 30 June have been made public. The expenditures in terms of paper money, however, increased very greatly as compared with the first six months of the year, and the total expenditures for the year may have reached nearly twice the amount fore-

cast in the March budget. There is no reason to suppose that the sound-money value of the expenditures during the second half year was materially higher than during the first half, but owing to the decline in the revenues (again in terms of sound money) and the inability to float further short-term obligations, large emissions of paper currency were necessary, so that more marks had to be paid out month by month as salaries, wages, and payments for supplies.

The total domestic debt of Poland on 1 Jan. 1922 was \$128,000,000 and the total foreign debt on the same date was \$284,042,961, of which \$166,257,965 was due the United States Government and \$18,200,000 to citizens of the United States on private loans.

Communications.—There are in the republic 7,295 miles of railways and 30,070 miles of highways. The railways are the property of the state. There are 1,005 post and telegraph offices exclusive of Prussian Poland and 545 telephone exchanges. There are 1,880 miles of navigable waterways. A merchant marine is projected to reach 220,000 gross tons, including 30 vessels of over 8,000 tons and smaller vessels for the coast trade.

History.—The controversy over Vilna was one of the chief obstacles confronting Polish statesmen at the beginning of the year. In April the union of Vilna with Poland was consummated despite opposition offered by Lithuania. The Genoa Conference was productive of new friction with Russia through the signing by Poland of the Allied joint note to Germany, after the announcement of the Russo-German Treaty of Rapallo, in which the Allied powers reserved the right to nullify any section of the Rapallo Treaty which violated the Treaty of Versailles. In a note to M. Skirmunt, the head of the Polish delegation to Genoa, M. Tchitcherin, the Soviet Foreign Minister, declared that the action of Poland conflicted with the Polish pledge made at Riga on 30 March to support the Soviet delegation at Genoa and gave Russia the right to abrogate the peace treaty made between Russia and Poland on 18 March 1921. The electoral bill was placed before the Provisional Parliament in May. According to it the legislature is to consist of two chambers—a lower House of 408 members and a Senate of 102 members. On 15 May the treaty between Germany and Poland regarding the status of Upper Silesia was signed at Geneva. Before its clauses could be put into execution a period of unrest developed in the region accompanied by race riots. On 29 June a new cabinet was formed with Arthur Sliwinski as Premier. This was understood to be a transition body pending the election of the new legislature but it fell prematurely on 7 July when confronted by a parliamentary bloc of the groups favorable to former Premier Ponikowski. Poland attached the greatest seriousness to the danger of Bolshevik propaganda and invasion on her eastern frontier. Special measures were taken from time to time for economic and administrative protection. The cabinet crisis continued throughout the month of July but on the 29th of that month Dr. Julian Nowak, Rector of the University of Cracow, was chosen Premier and succeeded in

forming a cabinet. Late in August new tension developed in regard to Upper Silesia when 6,000 Poles fled from the German area into the Polish part, bringing with them reports of German terrorism aimed at influencing the vote to be taken 3 September to determine whether German Silesia should be an autonomous state or remain a province of Prussia. The vote was 10 to 1 in favor of remaining with Prussia. The Minister of Finance late in September announced to the Diet his plans for a thorough reform of the finances, including a complete monetary reform to be finished in from three to five years and the increase and simplification of taxes. The political situation was very favorable at the close of the pre-election period. One of the last acts of the Provisional Diet was the passage of a Home Rule bill for Eastern Galicia granting local autonomy and proportional representation in the Central Government. The general election for the Lower House of the Diet was held on 5 November and for the Senate on 12 November. The results for both houses were as follows: Senate: 51 Christian Unionists; 17 Populists (Witos Group); 8 Populists (Liberation Group); 7 Socialists; 2 National Laborites and 26 Bloc of National Minorities and East Galician Zionists. House of Deputies: 163 Christian Unionists; 6 Centre Parties; 70 Populists (Witos Group); 49 Populists (Liberation Group); 2 Radical Peasants' Party; 41 Socialists; 18 Nationalist Laborites; 2 Communists; 15 East Galician Zionists; 5 Radical Ruthenians; 1 Jewish Populist; 2 other Jews; and 66 of the bloc of National Minorities. On 9 December Gabryel Narutowicz, the Foreign Minister was elected President of the Polish Union by the National Assembly, receiving 289 votes on the fifth ballot against 228 for M. Zamowski, the Minister to France. The new President was born in Telsze (now in Lithuania) in 1865; studied at Libau and at the Technical Institute of Petrograd and the Institut Polytechnique of Zurich. He had an international reputation as a waterways engineer in France, Spain and Switzerland and in 1908 was made professor at the Institut Polytechnique of Zurich. He served in this capacity until summoned by Premier Grabski in 1920 to become Minister of Public Works. He was continued in the two Witos cabinets, in the Ponikowski cabinets and took the Portfolio of Foreign Affairs in the Sliwinski cabinet and later the same in the Nowak cabinet. He was a delegate to the Genoa Conference and visited Rumania in September. Rioting of serious proportions marked his inauguration on 11 December when 20,000 Nationalists, mostly students and schoolboys, sought to prevent the ceremony. The President took up the duties of his office on 14 December and on the 16th visited an exhibition of paintings. He had just concluded a short address when he was shot by an artist named Niewodomski and died within a few minutes. M. Rataj, the speaker of the House of Deputies, who, in conformity with the Constitution, became President ad interim of the Republic, at once summoned General Sikorski to form a new cabinet. The President ad interim summoned the National Assembly for the election

of a new President, and it chose Stanislas Wojciechowski.

POLITICAL AND SOCIAL SCIENCE, American Academy of. An organization established about 30 years ago as a forum for the scientific discussion of social, civic, industrial and economic subjects. During 1922 the Academy published six special volumes, each devoted to some important national or international problems. These volumes were: 'The Federal Reserve System—Its Purpose and Work'; 'Russia Today'; 'The Determination of Wage Rates'; 'American Intervention in Haiti and the Dominican Republic'; 'Ethics of the Professions and of Business'; 'America and the Rehabilitation of Europe'; 'Industrial Relations and the Churches'; 'Western Europe and the United States.'

During the year the Academy held a number of special sessions in addition to the annual meeting which was held in May. The topics to which the six sessions of the annual meeting were devoted are as follows: 'The Industrial and Financial Situation in Europe and its Remedies'; 'To What Extent is America's Prosperity Dependent on the Rehabilitation of Europe?'; 'America and the Debts of Europe'; 'America and the Political Situation in Europe'; 'Is America's Co-operation Indispensable to European Rehabilitation?'; 'America's Relation to the European Situation.'

In 1922 the Academy entrusted Prof. Carl Kelsey, of the University of Pennsylvania, with a special mission to undertake a study of economic, social and political conditions in Haiti and San Domingo. The results of this investigation were published in a special publication of the Academy entitled: 'The American Intervention in Haiti and the Dominican Republic.' The officers of the Academy are: President, L. S. Rowe; Vice-Presidents, Carl Kelsey, Herbert C. Hoover, David P. Barrows; Secretary, J. P. Lichtenberger; Treasurer, Charles J. Rhoads. The Academy has its headquarters at West Philadelphia Station, Philadelphia, Pa.

POLITICAL SCIENCE, Academy of, an international organization, founded in 1880 and having its headquarters in Kent Hall, Columbia University, New York City. At the close of 1922, the membership was 5,076. Meetings are held semi-annually. The first meeting in 1922 was held on 30 April and took the form of a national conference on 'Railroads and Business Property.' Over a thousand persons attended each of the sessions. The Academy publishes *The Political Science Quarterly*; the 'Record of Political Events,' and 'The Proceedings.' The officers of the Academy are: President, Samuel McCune Lindsay; Vice-Presidents, Albert Shaw and Paul M. Warburg; Secretary, Parker T. Moon; Treasurer, George A. Plimpton; Assistant Treasurer and Executive Secretary, Ethel Warner.

POLITICS, Institute of. The Institute of Politics was projected in 1913 by the president and trustees of Williams College, Williamstown, Mass., and was made possible by the generosity of Bernard M. Baruch, of New York City, who

provided financial support for three years, 1921, 1922 and 1923.

The purpose of the Institute of Politics as set forth by Dr. Harry A. Garfield, president of Williams College, is "to advance the study of Politics and to promote a better understanding of international problems and relations." The Institute is a non-partisan forum where persons well informed on various subjects of international interest may exchange ideas.

Membership is open to men and women connected with the faculties of colleges and universities, especially in the departments of history, economics, and government; to writers on foreign politics; to persons engaged in or who have been engaged in the direction of foreign commerce or banking; to diplomatic and consular officials; to officers of the army and navy, and specialists in the employ of the government; to editors, editorial writers, foreign correspondents of the press; current events lecturers; and to those who receive invitations on account of their training and experience in the field of international law and politics.

International Relations was the subject of the First Session, 1921, and in treating this subject two quite different courses were pursued,—public lectures and round-table conferences. Six scholars of international reputation including the late Viscount James Bryce of England, Signor Tommaso Tittoni, president of the Italian Senate, and Count Paul Teleki, former Prime Minister of Hungary, were invited to come to the Institute as guests of the college, to deliver courses of lectures. These lecture courses were open to the members of the Institute and to the general public. The round-table conferences, open to members of the Institute only, were conducted by the foremost American authorities in their respective subjects.

At the Second Session, 27 July to 26 Aug. 1922, "International Relations" was again the general topic of discussion, and was treated in its historical, political, legal, economic and institutional phases, special emphasis being placed upon the problems of Central and Eastern Europe, the Far East and Latin America. Lectures were delivered by The Honorable Lionel Curtis, London; the Honorable Philip Henry Kerr, London; Dr. Rikitano Fujisawa, Tokyo, Japan; the Honorable Manoel de Oliveira Lima, Washington, D. C.; M. Raymond Recouly, Paris; Dr. Josef Redlich, Vienna.

At the round-table conferences addresses were delivered by the following: Dr. Alfred L. P. Dennis, Washington, D. C.; Prof. Robert H. Lord, Harvard University; Dr. Adam Shortt, Ottawa, Canada; Prof. Jesse S. Reeves, University of Michigan; Prof. George Grafton Wilson, Harvard University; Dr. Leo S. Rowe, Director General, Pan-American Union; Dean John H. Latané, Johns Hopkins University; Prof. George H. Blakeslee, Clark University; Dr. Stanley K. Hornbeck, Washington, D. C.; President David P. Barrows, University of California; Rear Admiral Austin M. Knight, United States Navy, retired; B. M. Anderson, Jr., New York City; Paul D. Cravath, New York City; David F. Houston, New York City;

Paul M. Warburg, New York City; Mr. Oscar T. Crosby, former Assistant Secretary of the Treasury; Hon. W. S. Culbertson, Vice-Chairman of the Tariff Commission; Arthur S. Draper, London; Walter S. Rogers, Washington, D. C.

The publications of the Institute cover the lecture courses and the round-table conferences.

The 1923 Session of the Institute of Politics will be held from 26 July-25 August and again "International Relations" will be the general subject of discussion. In addition to certain geographical areas like the Near East, and Latin America, the League of Nations will be discussed. The administration officers of the Institute are: Harry Augustus Garfield, Chairman; Walter Wallace McLaren, Executive Secretary; Willard Evans Hoyt, Treasurer. See also PEACE AND ARBITRATION, INTERNATIONAL.

POLO. See SPORTS.

POMONA COLLEGE, a non-sectarian co-educational institution, founded in 1888 and located at Claremont, Calif. In 1922-23 it had a faculty of 69 members, 778 students, a normal income of \$254,358.58 and an extraordinary income of \$154,293.28. Its property in 1922 was valued at \$3,167,925.11. James Arnold Blaisdell, D.D., is president.

PORTLAND CEMENT. See CEMENT.

PORTO RICO, the fourth largest of the Greater Antilles, an insular possession of the United States, bounded on the north by the Atlantic Ocean and south by the Caribbean Sea. The island of Santo Domingo lies about 45 miles to the west. Included in the territory are the small islands of Culebra and Viequez. The area of Porto Rico is 3,606 square miles and in 1920 it had a population of 1,299,809. The population in 1920 included 948,709 whites, 49,246 negroes, 301,816 mulattoes, 32 Chinese and 4 Japanese. The chief cities, with their populations in 1920, are: San Juan, the capital, 70,707; Ponce, 41,561; and Mayaguez, 19,069.

Education.—In 1899 the elementary school system was reorganized and education was made compulsory. There are on the island 1,911 school buildings, in which 193,269 pupils are taught. In addition there are a number of private schools. Night schools and kindergartens are well attended. For higher education there is the University of Porto Rico at Rio Piedras, seven miles from the capital. When the United States took over the island the percentage of illiteracy was 83. In 1920 this had been reduced to 55 per cent.

Finances.—The revenues of the insular government are derived from customs and excise duties. There are also a general property tax, income tax, a collateral inheritance tax, and various licenses and fees. The revenue for the fiscal year 1921-22 was \$10,183,500. Expenditures aggregated slightly less than this amount, leaving a cash balance on 30 June 1922 of \$72,936.24. The outstanding bonded indebtedness at the end of 1922 was \$12,146,000. The assessed valuation was \$286,461,677.

Production and Industry.—The soil of the island is extremely fertile and the greater part of it has been brought under cultivation. In 1920 the cultivated area in 41,078 holdings was

2,022,404 acres, of which 1,303,547 acres was improved land. The value of all farm property the same year was \$151,283,818. Irrigation is practised in the south of the island, largely under Government initiative. The chief products of the island are sugar, pineapples, oranges, grapefruit, tobacco and coffee. The sugar crop of 1921 was 490,000 tons. The tobacco crop was 14,000,000 pounds; and coffee, 27,000,000 pounds. Salt deposits on the island are worked, but mineral production is in an incipient stage. Stock raising is assuming important proportions.

Commerce.—Porto Rican imports in 1921 aggregated in value \$105,479,703. Exports the same year amounted to \$112,278,575, of which \$103,388,227 went to the United States, and \$8,890,348 to other countries. Of the imports, \$97,074,399 were purchased in the United States and \$8,405,304 were purchased in foreign countries.

Communications.—In 1921, 1,986 American and foreign vessels, aggregating 5,347,723 tons, entered Porto Rico. The chief port is San Juan. The island has over 1,100 miles of road and 339 miles of railways. The railway system connects the towns on the west coast and now almost penetrates all the interior part of the island. There are 1,848 miles of postal telephone and telegraph wire, served by 67 telegraph stations. There are 91 postoffices.

Government.—Porto Rico was ceded by Spain to the United States under terms of the Treaty of Paris signed 10 Dec. 1898. It was first administered under the Foraker Act of 12 April 1900. This act was amended 5 July 1909. The constitution of the island was finally determined by the "Organic Act," known as the Jones Act of 2 March 1917. The main features of this act are the granting of American citizenship to all Porto Ricans and the granting of adult suffrage, the separation of executive and legislative functions, creation of an elective senate and a reform of the judiciary system. Porto Rico has representative government. The executive power is vested in a Governor, appointed by the President of the United States. The legislative power is vested in a legislature which consists of a Senate of 19 members and a House of Representatives of 39 members. The members of both houses are elected for terms of four years by direct popular vote. There are six heads of departments who form a governor's council, known as the Executive Council. The judiciary comprises an Attorney-General, and staff, and the United States Court appointed by the President of the United States. Eight district courts are appointed by the Governor, as are the minor courts. Porto Rico sends a resident commissioner to Washington, who has a voice but no vote in the Federal House of Representatives. The Governor of Porto Rico in 1922 was E. Mont Reily. Governor Reily's administration was marked by bitter political strife from its beginning. In his inaugural address, delivered in the island capital, 30 July 1921, the Governor declared that there was neither sympathy nor hope in the United States for independence for Porto Rico. Immediately thereafter the Independence Party leaders fomented a movement for the Governor's removal from office. They made representations to Congress,

to the War Department and to the President of the United States, and in November 1921 a delegation of the Governor's opponents visited Washington to lay their case before the United States government. In the following month Governor Reily appeared in Washington to defend himself and shortly after returned to his task in San Juan. Throughout the entire year 1922 bitter assaults were launched in Porto Rico against Governor Reily. The charges ranged all the way from that of mere tactlessness to the alleged misuse of public funds. No act of the Governor that could possibly be construed to his disadvantage was overlooked by his enemies. The quarrel reached even the Congress of the United States. Through all these attacks President Harding retained confidence in the Governor, and all efforts to induce him to remove that official were unavailing. The political origin of the attacks was clear to all, and the failure of specific evidence to support the broad general accusations was generally acknowledged. The Governor's health broke down in the latter part of 1922 and on 16 Feb. 1923 he cabled his resignation to President Harding, the same to become effective 1 April 1923. He was succeeded, 6 April 1923, by Horace M. Towner of Iowa.

PORTO RICO, University of, a non-sectarian co-educational institution founded in 1903 and located at Rio Piedras, Porto Rico. In 1922-23 it had a faculty of 90 members, a student enrollment of 1,265 (468 collegiate, 797 secondary), property valued at \$350,000 and an income of \$240,000. Chancellor, Juan B. Huyke.

PORTS AND HARBORS. See **RIVERS AND HARBORS.**

PORTUGAL, a Republic of western Europe, with Spain occupying the Iberian Peninsula and a monarchy until 1910. It has an area of 35,490 square miles, including the Azores and Madeira, and a population of 5,957,985 in 1911, the date of the last census. The rural population is 67.6 per cent of the total. The chief cities with their populations are: Lisbon, the capital, 489,667; Oporto, 203,981; Setubal, 30,346; Funchal (Madeira), 24,687; Coimbra, 20,581; and Ponta Delgado (Azores), 16,179.

Religion.—The prevailing faith is the Roman Catholic. There is nominal toleration of all denominations, but the Republican government is avowedly anticlerical and hostile to the national church. There are about 5,000 Protestants and 500 Jews in the Republic. There are three archbishops and 23 bishops in Portuguese territory, including the homeland.

Education.—Elementary education is compulsory. There are 7,007 primary schools with 170,415 pupils; 32 secondary schools with 11,791 students. There are three universities—Lisbon, Coimbra and Oporto. There are also a technical school at the capital, special schools of art and music at Lisbon and Oporto, commercial schools, and military and naval schools.

Production.—Of the total area of Continental Portugal 26 per cent is cultivated or under pasture, 17 per cent is under forest, 3½ per cent is under vineyards, 4 per cent is under fruit trees and 43 per cent is waste land. Cork is the chief forest product, the annual output being about 176,000,000 pounds. In the north Indian corn is grown and cattle are raised, while

sheep, goats and the cultivation of rye occupy the mountainous sections. Wheat production in 1919 was 4,767,665 bushels; rye, 1,785,838 bushels; oats, 3,037,831 bushels; and barley, 1,009,780 bushels. The vintage of 1919 was 96,641,160 gallons. Olive oil was produced to the extent of 12,760,000 gallons. The wool clip in 1919 amounted to 6,244,684 pounds. Other products are figs, tomatoes, potatoes, oranges and onions.

The country has considerable mineral wealth, but lack of coal and transport render workings unprofitable. Wolfram, iron, copper, manganese, lead, tin and gold are among the minerals found. The fisheries are a large source of wealth, giving employment to 36,673 persons with 11,922 vessels of 37,609 tons. Sardines and tunny fish form the basis of this industry. The total value of the catches averages 20,000,000 escudos yearly. Other important industries are the making of porcelain tiles, chinaware, lace and embroideries.

Commerce.—Portugal exports manufactured cork, raw cork, raw hides, olive oil, rosin, wool, sardines, lumber and chemicals. The chief imports are coal, cotton, codfish, coffee, fertilizers, rice, rubber and animal fats.

Finance.—In the fiscal year 1921 the revenue amounted to £26,913,445 and the expenditure to £52,802,831. There was a large deficit also in 1922. In the autumn of 1922 the exchange situation grew continually worse. The exchange value of the escudo dropped from 6.77 cents to 4.78 cents, with no prospect of improvement. The general lack of confidence in the financial stability of the Portuguese government, manifested in the falling exchange, was accounted for by the continued deficit in the Government administration and the great increase in the issue of paper currency. The deficit for 1922 was estimated at 400,000,000 escudos. The budget for 1923-24, proposed expenditures of approximately 813,402,000 escudos, an increase of 240,089,000 escudos over 1922-23. Receipts were estimated at 674,076,163 escudos leaving an anticipated deficit of 139,325,837 escudos. The total Portuguese note circulation on 15 Sept. 1922 amounted to 840,000,000 escudos, showing an increase of 127,500,000 since the beginning of the year. The reserve against these notes amounted to 8,750,000 gold escudos.

Defense.—The armed forces is a militia raised by conscription. The peace establishment consists of 2,800 officers and 35,000 men of all arms. The navy consists of three protected cruisers, four gunboats, four transports, two training ships, a minelayer, five destroyers, seven torpedo boats, four submarines and six former Austrian torpedo boats for police and customs duties. The Naval personnel is about 6,000.

Shipping and Communications.—The Portuguese merchant marine has 66 steam vessels of 70,193 tons and 259 sailing vessels of 43,844 tons. The clearances at the ports average annually 9,500,000 tons. The Republic has a total railway mileage of 2,128 miles, of which 733 miles are the property of the state. The five privately owned lines have a mileage of 1,314 miles. There are 4,266 postoffices and 628 telegraph offices with 5,945 miles of line and 13,415 miles of wire.

Banking.—The Bank of Portugal is the Government financial institution. There are 18

other banks registered in the Republic, with an aggregate capital of 47,000,000 escudos and deposits of 331,465,000 escudos. The monetary unit is the gold escudo, of 100 centavos, worth in normal times \$1.05 in American currency, but in 1922 depreciated to about 4.78 cents.

Government.—The Constitution of the Republic, adopted 20 Aug. 1911, provides for a bicameral legislature. The Upper Chamber of 71 members is elected by the Municipal Councils and is renewed half at a time every three years. The Lower Chamber has 164 members elected by direct suffrage for three-year terms. The President of the Republic is elected by both houses for a term of four years and is ineligible for re-election. The President appoints the Ministers of the Cabinet, but these are responsible to the Parliament. The Constitution may be revised every ten years. The president of the Republic in 1922 was Dr. Antonio Jose de Almeida, elected 6 Aug. 1919. The composition of the Upper Chamber in 1922 was: 33 Democrats, 9 Liberals and 15 of other parties. The Lower Chamber had 73 Democrats, 30 Liberals and 46 of other parties.

History.—The political situation at the opening of 1922 was very critical. Efforts were being made to bring to justice the murderers of Premier Granjo who with others of his party was shot down by his political adversaries on 19 Oct. 1921. The Cunha Leal Ministry resigned 3 February after a brief period of existence menaced on all sides by rival political parties. It was reported that guns were missing from the State arsenals and only the presence of an English squadron in Lisbon Harbor prevented a new revolution from getting under way. The new cabinet of Maria da Silva came into office on 7 February and one of its first acts was to arrest six persons—all officers—on a charge of complicity in the October murders. As a consequence of these arrests a new revolutionary outbreak was feared and President Almeida and the entire Cabinet took refuge in the fortress of Cascais and troops were brought to the capital from the provinces. The President and Cabinet returned to Lisbon on 23 February, the threatened outbreak not having occurred. The next step of the Government was to clip the wings of the Republican Guard whence arose most of the disaffection. This was accomplished by reducing its numbers and dispersing it throughout the country to do purely police work under the Department of the Interior. The finances now received attention and for the first time since 1918 a budget was introduced showing estimated revenues amounting to \$25,000,000 and expenditures amounting to \$31,000,000. Despite the deficit it was an earnest of the desire for retrenchment and reform. A loan for \$15,000,000 was secured from Great Britain, the first the Republic had ever received from any country. For a time all petty internal strife was forgotten and the Nation turned its gaze on the two intrepid aviators who left Portugal for Brazil in April and arrived in Rio after many adventures on 5 June. In Portugal the attempt recalled the nation's early period of glory as a pioneer in discovery. The Government showed no signs of weakening in its aggressive policy towards the revolutionaries and

the fact that the Da Silva cabinet had endured for many months was pointed out as a good index of its strength. Colonel Pinto, commander of the Republican Guard, was arrested late in June and deported to the Azores on being convicted of sedition. The reception accorded the Captains Sacadura and Coutinho on the completion of their Transatlantic flight to Brazil was the source of great satisfaction in Portugal. On 23 October the Government was violently attacked in the Chamber for having temporarily suspended certain opposition newspapers. On 4 November the Silva cabinet resigned because of criticism of certain departments by the Opposition. After three weeks of futile effort the former Premier Da Silva was asked to form a ministry and he reconstructed his cabinet on 30 November. The political stability established during the nine months of his former ministry was a factor in moderating Parliamentary opposition. At the close of the year general attention was being diverted from petty politics to questions of national interest and the country was settling down from its long period of unrest although signs were not wanting that the Monarchists were preparing to take advantage of any and every opportunity to press their claims.

PORTUGUESE EAST AFRICA. See MOZAMBIQUE.

PORTUGUESE GUINEA, a colony of Portugal on the coast of Senegambia, West Africa and entirely surrounded on the land side by French possessions. Its area is 13,940 square miles and its population is estimated at 289,000. Bissau is the chief port. The colony produces hides, ivory, seeds, oil seeds, rubber and wax. There are 100 miles of telegraph lines. Imports in 1920 were valued at 15,659,751 escudos and exports at 9,540,517 escudos.

PORTUGUESE WEST AFRICA. See ANGOLA.

POSTAL SERVICE, United States. According to the annual report of the Postmaster General, the revenue of the United States Postal Service for the fiscal year ended 30 June 1922, including fees from money orders and profit from postal savings business, amounted to \$484,853,540.71, an increase of \$21,362,266.01 over the receipts for the preceding fiscal year which totaled \$463,491,274.70. Audited expenditures for the year amounted to \$545,644,208.54, a decrease of \$75,349,465.11 as compared with the expenditures for 1921. Nevertheless, expenditures in 1922 exceeded receipts by \$60,790,667.83, to which sum should be added losses due to fires, burglaries and other causes of \$24,732.53, thereby making the total deficit for the year \$60,815,400.36. The principal source of the postal revenues is the postage paid on mail matter, which in 1922 amounted to \$432,562,020.15. The average per capita expenditure for postage during the year was \$3.92. Audited sales of postage stamps and other stamped paper during the year amounted to \$422,108,842.15; sales of war-savings and Treasury savings issues totaled \$58,570,645.96. Documentary revenue stamp sales amounted to \$11,377,307.17; proprietary revenue stamp sales to 31 Dec. 1921 (time of discontinuance) to

\$3,007,852.65. Requisitions filled during the year called for 14,261,948,813 adhesive postage stamps; 57,401,250 special delivery stamps; 62,263,827 postage-due stamps; 1,111,124,439 postal cards; 2,364,372,708 stamped envelopes; 38,158,226 newspaper wrappers; 496,440 international reply coupons; 734,400 postal-savings stamps; 400,248 war-savings stamps; 575,495 one dollar Treasury savings stamps; 613,775 twenty-five dollar, 564,760 one hundred dollar, and 77,035 one thousand dollar Treasury savings certificates; 114,876,990 documentary and 116,458,400 proprietary internal revenue stamps. The total units issued amounted to 18,130,065,806. Stamp books issued totaled 37,763,903 and stamp coils, 4,052,472.

A new design for the ten-cent special delivery stamp was approved and the new stamp placed on sale 12 July 1922. The six-cent international reply coupons were discontinued and a new 11-cent denomination was placed on sale 1 Jan. 1922. For many years the design on stamps had been confined to portraits of Washington and Franklin. During the year new designs for all denominations of stamps were decided upon. These new designs include portraits of various individuals prominent in the history of the country as well as a number distinctly national in character. The subjects selected for the new series are as follows: 1-cent, Franklin; 2-cent, Washington; 3-cent, Lincoln; 4-cent, Martha Washington; 5-cent, Roosevelt; 6-cent, Garfield; 7-cent, McKinley; 8-cent, Grant; 9-cent, Jefferson; 10-cent, Monroe; 11-cent, Hayes; 12-cent, Cleveland; (13-cent discontinued); 14-cent, Indian; 15-cent, Statue of Liberty; 20-cent, Yosemite; 25-cent, Niagara; 30-cent, buffalo; 50-cent, Arlington Amphitheatre; \$1, Lincoln Memorial; \$2, Capitol; \$5, America. There were 7,492 presidential postmaster appointments confirmed by the Senate and 5,219 fourth class postmasters commissioned during the year. On 1 July 1922 there were 51,947 postoffices in the United States and its possessions compared with 75,924 on 30 June 1902. Extension of the rural delivery service is largely responsible for this reduction. There were, on 30 June 1922, 54,201 money order offices in the United States which during the year issued 154,076,407 domestic money orders, having a total value of \$1,211,784,679.24, and 883,740 international money orders having a value of \$14,192,840.10.

Postal Savings.—The total liability of the Government to postal-savings depositors at the close of the fiscal year was \$140,430,167.93 as compared with liabilities totaling \$155,007,543.65 at the close of the preceding fiscal year. On 15 Dec. 1921 the Department inaugurated at the larger postoffices for the protection of both depositors and clerks handling such deposits a finger-print system which has resulted, it was stated, in thwarting numerous attempts to obtain cash on stolen certificates.

Air Mail Service.—The only air mail service operated by the Department during the fiscal year was the transcontinental route from New York to San Francisco, 2,680 miles in length. The round trip (5,360 miles) is covered each day, Sundays and holidays excepted, necessitating an annual flying schedule of approxi-

mately 1,800,000 miles. The service consists of a relay advance of mail from New York across the continent, and vice versa; that is to say, no particular mail is taken for a complete trip across the continent. Certain mail which misses the late trains out of New York is advanced to Cleveland; other mail, which ordinarily would go into Chicago too late for delivery in the afternoon, is taken from Cleveland to that city. This process is repeated in relays across the continent with the result that approximately 12,000 pounds of letter mail is advanced each day some three or four hours. The planes used are remodeled De Havillands acquired from the Army. At the close of the year there were 70 such planes in flying condition. Liberty motors are used. There were no fatalities or serious accidents on mail trips during the fiscal year, but on 16 July 1921 a pilot who was ferrying a plane from San Francisco to Reno fell and was killed.

Railway, Rural and Star-Route Service.—On 30 June 1922 mails were being carried over 231,981 miles of railroad; the actual expenditure for railway transportation during the year was \$87,288,293. During the railway shopmen's strike in 1922, 1,297 mail trains were annulled. Mails were being carried over 8,359 miles of electric railways, the annual rate for the service being \$558,500. Power-boat mail service covered 47,271 miles, the annual rate of expenditure being \$1,367,908, exclusive of freight and express service to and from Alaska and from Porto Rico. During the year 434 new rural routes were established bringing the total number of rural routes in operation up to 44,186 which supplied approximately 29,742,542 individuals. The cost of this service was estimated at \$84,575,696. On 30 June 1922 star-routes numbered 10,715, aggregating 153,566.17 miles. The cost of this service was \$12,585,110.62.

Parcel Post.—From the Postmaster General's report it would seem that complete statistics showing the number of Parcel Post packages handled during the fiscal year were not available. However, during the period 1-15 Oct. 1921 statistics were taken at all first and second class offices and at a representative number of third and fourth class offices. These statistics show that during the statistical period the total number of parcels mailed at all postoffices was 44,051,083; that the postage on such parcels was \$5,737,299.87, or an average of 13 cents per parcel and that the total weight of such parcels was 180,547,744 pounds.

Registered and Insured Mail.—A total of 74,021,013 pieces of mail were registered during the year bringing in fees totaling \$7,402,101.30, exclusive of postage. In addition, 7,439,642 pieces of mail were registered upon which no fees were paid. Insured parcels handled during the year totaled 120,333,881 and fees received, exclusive of postage, amounted to \$6,538,641.55. Parcels sent collect-on-delivery numbered 30,941,570 and fees collected amounted to \$3,152,150.60.

Mail Robberies.—For one year preceding 1 April 1921, losses due to mail robberies amounted to \$6,346,407. From April 1921 to the end of the fiscal year, 1922, they were reduced to \$2,616,333, including the New York loss of

\$1,346,150. On 9 Nov 1921 marines were detailed to guard mail trains with the result that, during the seven ensuing months, mail robberies were reduced to \$705,000 of which amount \$651,791 had been recovered by the end of the fiscal year. In March 1922, in an effort to clean up the New York postoffice, nine men were arrested and confessed. Most of them were ex-employees who had been dismissed from the service. Four hundred and sixty employees in the Registry Division of the New York postoffice were finger-printed with the result that 49 were found to have criminal records.

Foreign Mail Service.—The total cost of the foreign mail service of the United States during the fiscal year 1922 was \$6,011,439.58. Letters and post cards transported totaled 3,904,932 pounds; other articles, 52,683,515 pounds. According to an announcement made by the Postoffice Department, 27 Sept. 1922, the postal rate on letters to each of the following countries is now two cents for each ounce or fraction of an ounce: Argentina, Bahamas, Bermuda, Bolivia, Brazil, British Guiana, British Honduras, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Dutch, or Netherland, West Indies (Arubam, Bonaire, Curacao, Saba, St. Eustatius and the Dutch part of St. Martins), Ecuador, England, Haiti, Honduras, Ireland, Jamaica, Leeward Islands (Antigua with Barbuda and Redonda, St. Kitts or St. Christopher, Nevis with Anguilla, Dominica, Montserrat and the British Virgin Islands), Martinique, Mexico, Newfoundland, New Zealand, Nicaragua, Panama, Peru, El Salvador, Scotland, Spain and her colonies (Balearic Islands, Canary Islands and Spanish possessions on the north coast of Africa), Turks Island, Wales, Western Samoa, Windward Islands (Barbados, Grenada, the Grenadines, St. Lucia, St. Vincent, Tobago and Trinidad), United States Naval vessels (stationed abroad) and United States Naval Hospital, Yokohama, Japan. The rates on postal cards to the above named places vary, being one cent in some cases and two cents in others. Local postmasters should be consulted for rates on other classes of mail addressed to any of the foregoing countries.

POTASH. One of the most important recent events bearing upon the potash industry was the discovery, by the United States Geological Survey, of rich potash beds in the greensand marl belt of New Jersey,—a result of work begun in the fall of 1918, as part of the systematic search for potash conducted by the United States Geological Survey since 1910. Several companies have attempted to produce potash from New Jersey green sand, and some of them have marketed small quantities, but, according to the Geological Survey, none is now actually producing. It has generally been considered commercially impracticable to extract the potash from the green sand, owing to the relative insolubility of the glaucosite (a silicate of iron and potassium) in which the potash is locked up. Of recent years, however, many experiments have been conducted with a view to finding some process of extracting potash from silicates. The greensand marls have received

attention in this connection, because of their accessibility and abundance, and the comparative ease with which they can be mined. This New Jersey belt extends across the state, from the vicinity of Sandy Hook, at the northeast, to the Delaware River, near Salem at the southwest. It is about 100 miles in length, and varies in breadth from 14 miles to one mile or less. The supply that has been discovered is officially estimated to be at least 256,953,000 short tons of potash (K_2O) that could be mined by open-pit methods. This would be sufficient to supply the needs of the United States for about 1,000 years, since the average annual importation of potash for five years immediately preceding the World War (including 1914) was 257,143 short tons. The development of a potash industry from the New Jersey greensands will depend on the ability of the manufacturers to compete not only with foreign, but also with American producers. Details concerning the New Jersey investigations can be found in Bulletin 727, Department of the Interior, United States Geological Survey (1922).

Other data of special and immediate interest, relative to the potash industry, are the following: The crude potash produced in the United States in 1920 totaled 166,834 short tons; in 1921, only 25,485 short tons. Of the total for 1921, the tonnage by States was, California, 13,075; Pennsylvania, 1,257; other States, 11,153. This output was the product of 18 companies, operating 20 plants. Information regarding exports is meager. As a matter of fact, comparatively small quantities of potash salts are exported from the United States. In 1920, potassium salts to a total value of \$3,562,015 were exported, including 1,410 short tons of chlorate salts, valued at \$445,243. In 1921, the total value of such exports was \$335,993, and of this total \$49,709 represented 188 short tons of chlorate salts.

Imports of potash (K_2O) for consumption in the United States for the nine-year period, 1913–1921, were the following, in short tons: 270,720 in 1913; 207,089 in 1914; 48,867 in 1915; 7,885 in 1916; 8,100 in 1917; 7,957 in 1918; 39,619 in 1919; 224,792 in 1920; and 81,017 in 1921. Until 1915 practically all the potash brought into the United States came from Germany; from 1916 until 1920 it came from many different countries; in 1921 it came chiefly from Germany, France, and Belgium. The United States Geological Survey, the authority for these figures, estimates, however, that the potash from Belgium probably originated in Germany. The total output of the German mines in 1921 was 921,186 metric tons of actual potash (K_2O). Of this amount, 768,565 metric tons were consumed in Germany, and 152,621 metric tons exported. The French mines in 1921 produced a total of 903,134 metric tons of crude material, containing 146,355 metric tons of potash (K_2O).

The German output of potash in 1922 was estimated at 1,250,000 tons; the consumption at 850,000 tons. Because of the shortage of phosphoric acid there has been an increased use of potash in fertilizers for German soil. In 1921 only 268,000 tons of phosphoric acid were applied, as against 630,000 tons in 1913. The

yield of former German potash mines in Alsace amounted in 1922, according to estimates, to 120,000 tons.

The estimate of the 1922 Alsatian export capacity is 50,000 to 60,000 tons; the German export capacity, 400,000 tons. Officers of the German Potash Syndicate have denied the reported accord between German and Alsatian potash groups to form a monopoly and raise prices. According to figures published in Berlin, Germany exported 917,000 double centners (double centner equals 200 pounds) of potash to the United States, during the first nine months of 1922, as compared with 114,000 double centners for the same period in 1921. Estimates place the 1922 total German production at nearly 13,000,000 double centners of pure potash, about 3,800,000 double centners more than in 1921. In 1913 occurred the greatest pre-war annual production, 11,103,000 double centners. The 1922 production was achieved in spite of the loss of mines in Alsace-Lorraine, which now compete with the German syndicate, and which produced, in 1921, 1,106,000 double centners. Germany's consumption of potash rose from 5,300,000 double centners in 1921 (first three quarters), to 7,500,000 for the same period of 1922. The explanation probably is to be found in the increased demands made upon the agriculturists in connection with the feeding of the population. The United States Department of Commerce in December, 1922, announced that, according to official information from Berlin, German potash prices effective 1 December, were about 145 per cent higher than on 1 November. Export sales also increased, and orders were received from countries that had not previously been purchasing.

POTATOES. According to the Department of Agriculture, the 1922 potato crop of the United States was the largest on record. It totaled 451,185,000 bushels, as compared with the 1921 crop of 361,659,000 bushels, the 1920 crop of 403,296,000 bushels and the ten-year average crop for the years 1911-20 inclusive of 368,169,000 bushels. The acreage harvested was 4,331,000 in 1922; 3,941,000 in 1921, and 3,657,000 in 1920. The average yield per acre was 104.2 bushels in 1922; 91.8 bushels in 1921, and 110.3 in 1920. The total farm value of the crop based on 1 December prices was \$262,608,000 in 1922; \$398,362,000 in 1921, and \$461,778,000 in 1920. The average farm price of potatoes per bushel on the 1 December of each of the years mentioned was 58.2 cents in 1922; 110.1 cents in 1921 and 114.5 cents in 1920. Minnesota led the States in production in 1922 with a total output of 43,740,000 bushels as compared with 32,250,000 bushels in 1921, and 31,581,000 bushels in 1920. Wisconsin came next with a yield of 40,672,000 bushels in 1922, as compared with 21,420,000 bushels in 1921, and 33,264,000 bushels in 1920. Michigan was third, with 37,842,000 bushels in 1922 as compared with 27,200,000 bushels in 1921, and 36,225,000 bushels in 1920. New York was fourth with 37,400,000 bushels in 1922, as compared with 33,990,000 bushels in 1921, and 40,625,000 bushels in 1920. Production in other States in bushels in 1922 was as follows: Penn-

sylvania, 28,512,000; Maine, 21,600,000; Colorado, 18,460,000; North Dakota, 17,820,000; Virginia, 16,585,000; New Jersey, 16,435,000; Idaho, 15,910,000; Ohio, 11,214,000; California, 10,260,000; Washington, 9,425,000; Nebraska, 11,676,000; Illinois, 7,497,000; Iowa, 8,460,000; Missouri, 5,400,000; Montana, 5,796,000; Oregon, 5,145,000; Indiana, 5,624,000 and Maryland, 5,151,000. The estimated per capita production of white potatoes in the United States in 1922 was 4.16 bushels. This average, it was stated, was exceptionally high, having been exceeded only six times in the 57 years during which the Department of Agriculture has been keeping crop records. The highest per capita production was in 1895, when the average was 4.56 bushels.

Idaho led with a per capita production of 35 bushels, followed by Maine with 27.9 bushels; North Dakota with 27 bushels; Colorado with 19.1 bushels; Minnesota with 17.9 bushels and Wisconsin with 15.1 bushels.

The Department of Agriculture gives the following statistics with reference to the 1922 world crop of potatoes: Acreage for 24 countries, 20,261,000; production in 17 reporting countries (estimated) 3,130,000,000 bushels. It is further stated that in 16 countries from which comparable reports for 1921 were available, the production in 1922 was estimated at 675,000,000 bushels more than the 1921 crop and 40,000,000 bushels more than the average production of the five years 1909-13. See also PLANT INDUSTRY, UNITED STATES BUREAU OF.

POTATO WEEVIL. See ENTOMOLOGY, UNITED STATES BUREAU OF.

POULTRY AND EGGS. As estimated by the Department of Agriculture, the combined farm value of chickens raised and eggs produced in the United States in 1922 was \$854,207,000 as compared with \$900,820,000 in 1921. About 543,000,000 chickens with a farm value of \$354,199,000 were raised on farms in 1922 as compared with 510,000,000 chickens valued at \$362,253,000 raised on farms in 1921.

Egg production in 1922 totaled 1,962,356,000 dozen valued at \$500,008,000 as compared with 1,837,486,000 dozen valued at \$538,567,000 produced in 1921. Expressed in individual eggs instead of in dozens the chicken eggs produced on the farms of the United States in 1922 was nearly 24,000,000,000. However not all of the 1,962,356,000 dozen chicken eggs produced during the year were consumed as food, nor were all of those consumed as food utilized as eggs apart from other materials. Large quantities were consumed in industries, in the manufacture of other than food products and about 113,000,000 dozens were used in the raising of chickens.

The farm value of chickens reached its peak in 1920 with an average of about 86.5 cents per fowl. In 1921 the price declined to 71 cents per fowl and in 1922 there was a still further decline to 65 cents per fowl. Likewise the farm price of chicken eggs dropped from an average of 44.4 cents per dozen in 1920, to 29.3 cents per dozen in 1921 and then down to 25.5 cents per dozen in 1922.

It was estimated that there were 412,000,000 chickens on farms on 1 Jan. 1922, a time of the year when the number of chicks is low. There

were 385,788,000 chickens on farms 1 Jan. 1921, and 359,537,127 on farms on 1 Jan. 1920.

Figures showing the number of other fowls (ducks, geese, guinea fowls, pigeons and turkeys) on farms in the United States in 1922 were not available but in 1921, the estimate was 24,000,000. The estimated value of these fowls was as follows: Ducks, \$4,900,000; geese, \$7,000,000; guinea fowls, \$1,900,000; pigeons, \$1,400,000; turkeys, \$12,900,000; total \$28,100,000. The estimated value of the eggs of such fowls was: duck, \$500,000; goose, \$500,000; guinea fowl, \$400,000; turkey, \$1,600,000; total \$3,000,000.

POWELL, G. Harold, d. 18 Feb. 1922. See HORTICULTURE.

POWER. See HYDROELECTRIC DEVELOPMENT.

PRECIOUS STONES. See GEMS AND PRECIOUS STONES.

PRESBYTERIAN CHURCH IN THE UNITED STATES. Commonly known as the Southern Presbyterian Church, this denomination includes within its territory all States south of the Mason and Dixon line and the Ohio River and east of the Mississippi. West of the Mississippi it includes Missouri, Arkansas, Texas, Oklahoma and New Mexico. While not one of the largest churches in the United States, few, if any, are stronger in proportion to numbers. The Church is composed of 17 Synods and 88 Presbyteries. In 1922 it had 3,492 organized churches, a net increase of 17 over the number in 1921. It had 2,056 ministers, 30 more than it had in 1921. Office holders in churches numbered 13,849 ruling elders and 14,632 deacons. Candidates for the ministry numbered 470, an increase of 104 over the number in 1921. During the year the net increase in the membership of the churches was 14,796 making the total number of members at the beginning of 1923, 411,854. New members added on profession of faith during the year numbered 24,002. The Sunday School enrollment in 1922 was 396,850, an increase of 26,010 over the 1921 enrollment. During the year the churches gave for their own support \$6,271,402 and for outside benevolences \$5,472,323. This shows per capita gifts to these causes of \$13.28 and \$15.22 respectively or a total of \$28.50 for each member of the churches. The women of the church are splendidly organized in the Woman's Auxiliary with 2,108 local auxiliaries, having a membership of 89,000. Their contributions for all causes in 1922 amounted to \$1,143,318, or an average of \$12.85 per member. The men and the young people have not yet been so well organized as the women, but there was at the beginning of 1923 great activity among each of these classes and it was assured that soon there will be great success in this direction. The Home Mission work of the church was pressed vigorously during 1922 in all parts of its territory with very gratifying results. People of all classes and many races were reached. The Gospel in this work was being preached in more than a dozen languages. The Foreign Mission work—the greatest work this church is doing—is being carried on in seven foreign countries: Mexico, Cuba, Brazil, China, Japan, Korea and the African Congo by 463 missionaries sent out

from this country, assisted by 1,340 native workers. In these fields there were at the close of 1922, 49,694 members. There were added to the mission churches during the year on profession of their faith 4,731. The number enrolled in the Sunday schools was 76,857. The gifts of the native Christians for all religious purposes totaled \$82,268. There were in the mission day schools, 36,640 students. This Church has always laid great stress upon education. During the past year several million dollars were raised for its educational institutions, and nearly all of these during the 1922-23 school year were full to overflowing with students. The Church is active and aggressive in all departments of its work, but it remains, as it has always been, very conservative in its doctrines. It stands for the old fundamental principles, and there is little deviation from these on the part of either ministers or members.

(REV.) WM. S. CAMPBELL,

Editor of the Presbyterian of the South.

PRESBYTERIAN CHURCH OF THE UNITED STATES OF AMERICA. The one hundred and thirty-fourth General Assembly of the Presbyterian Church of the United States of America met at Des Moines, Iowa, 18-25 May. The Rev. Calvin C. Hays of Blainsville, Pa., was elected moderator. Among the hundreds of commissioners present, 21 foreign missionaries were delegated to the Assembly by their respective missions. The Assembly took a decisive stand on the "widespread and growing and—in many instances—boasted violation of law, in particular of the Eighteenth Amendment to the Federal Constitution." A call was made "upon all members of the Church and upon all Christians for continued and increased activity in behalf of the maintenance of all laws." A strong plea was made "for a better support of the ministry," although the Presbyterian Church of the United States of America ranks among the highest in this matter. The Assembly voiced great sympathy with "world-alliance for international friendship" and also with the plan of organic union between various Evangelical churches. The most important change made in the policy of the Church was the adoption of a report, by which the 16 boards and agencies of the Church were reduced to four, with the establishment of a General Council. The four boards are to be a Board of Foreign Missions, Board of National Missions, Board of Education and Board of Ministerial Relief and Sustentation. Women, for the first time in the history of the Church, are to be given a place on these executive agencies. The General Council is an absolute innovation. It replaces the Executive Commission and the New Era Committee and is to consist of 27 members, of whom the moderator of the Assembly and his two immediate predecessors are to be ex-officio members. It is to have a permanent chairman, appointed for five years. Each of the four boards will be represented on the council, whilst 18 members are to be elected from the Church at large. As has been pointed out by many critics, it virtually establishes a House of Bishops in the Presbyterian Church. This matter comes up for final settlement at the Assembly at Indianapolis in 1923.

Under another vital change in the policy of the Church women hereafter may be elected as deacons, by a change in the Form of Government Ch. 13, S. 2. This matter also is to be settled by the Assembly of 1923. From the printed statistics of the minutes of the Assembly I call the following information:

Presbyteries 304; ministers, 9,965. (There were 172 deaths reported among the ministry; the ages of the deceased ranging from 24 to 90 years, whilst the average age attained was 60 years.) Licentiates, 246; local evangelists, 151; candidates, 1,087; churches, 9,710; elders, 4,654; deacons, 8,362; received on confession, 93,259; received on certificate, 65,324; restored, 11,195; dismissed, 54,179; suspended, 55,050; died, 19,919; net total, 1,756,918; baptized on confession, 35,327; infants baptized, 42,311. The Special Committee on Life and Work supplies the following statistics: Pastors, 4,103; Sabbath school superintendents, 1,349; professors and teachers, 488; retired ministers, 540; evangelists, 280; ministers without charge, 1,850; miscellaneous, 153; home missionaries, 76; foreign missionaries, 251; in transit, 157; secretaries, 252; superintendents, 87; chaplains, 48, whilst the attendance on the Sabbath school totals 1,502,616. A comparative study of the statistics of 1920 and 1922 shows an increase in the synods from 40 to 47; in presbyteries from 288 to 304; in candidates for the ministry from 1,012 to 1,087; in evangelists from 133 to 151 and in ministers from 9,924 to 9,965. Of all the churches 4,606 are supplied with pastors and 2,932 with stated supplies, whilst 2,024 are vacant. Manses for the pastor are supplied by 4,614 churches. The value of all the church property, in the entire Church, is not given in the statistics but it runs up into the millions of dollars. Some of these churches are very small, which explains the large number of vacancies. There are 587 churches which have less than 10 members; 1,127 with less than 25 members; 1,618 with less than 50 members; 1,223 with less than 75 members; 800 with less than 100 members whilst 4,406 churches have a hundred and more members.

In 3,185 of the churches no additions were reported, while only 78 reported additions of 100 and over. Additions in the entire Church totaled 9,770. New churches organized numbered 109; 114 were disbanded; 133 ministers were received from other denominations; 56 were dismissed to other denominations, 10 churches were received from other denominations and 13 were dismissed to other denominations. Contributions reported were as follows: For home missions, \$3,867,184; for foreign missions, \$3,746,359; for education, \$1,230,533; for publication and Sunday school work, \$442,412; for church erection, \$345,621; for ministerial relief and sustentation, \$543,382; for freedmen, \$347,892; for temperance, \$197,019; for evangelism, \$207,726; for men's work, \$42,687; for Sabbath observance, \$39,919; for general assembly, \$269,509.93; for congregational purposes, \$32,739,714; for miscellaneous purposes, \$3,271,377, a grand total of \$47,341,334.93.

HENRY ELIAS DOSKER.

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PRESBYTERIAN CHURCH, United.

This church is composed of 13 synods and 69 presbyteries. The Rev. Dr. David F. McGill, of the department of church history in the Pittsburgh Theological Seminary, has supplied the following statistics relative to the Church in 1922: ministers, including those without charge, 959; licentiates, 32; students of theology, unlicensed, 47; congregations in America, 929, in foreign fields, 174; mission stations in America, 26, in foreign fields, 337; Church membership in America, 162,780; increase during the year—on profession of faith, 8,727, by certificate, 6,756; baptisms—infant, 3,910, adult, 2,290, membership of the entire Church, 216,048; increase during the year—on profession of faith, 11,048, by certificate, 10,145; baptisms, infant, 6,606, adult, 3,171; Sabbath-school enrollment, 173,238; Sabbath-school contributions, \$405,780; missionary societies, 1,638; young people's societies, 977 with a total membership of 32,438; contributions of denomination: for salaries of ministers, \$1,248,415; for congregational purposes, \$1,784,196; for the budget, \$660,572; specials to work abroad, \$632,939; specials to work at home, \$761,816; benevolences to work outside the denomination, \$185,782; to women's work, \$291,460; total contributions, \$5,565,180; average per member, \$34.18; average salary of pastors in America, \$2,092.

PRESBYTERIAN COLLEGE OF SOUTH CAROLINA, an educational institution for men, founded in 1880 and located at Clinton, S. C. In 1922-23 it had a faculty of 12 members and 190 students. Information regarding the value of institution's property and its income not given. Davison McD. Douglas, D.D., is president.

PRESERVING. See CANNING AND PRESERVING.

PRINCE EDWARD ISLAND, a Maritime province and the smallest in the Dominion of Canada, lying at the south of the Gulf of Saint Lawrence. Its area is 2,184 square miles and in 1921 its population was 88,615. Charlottetown, the capital, has a population of 12,347; Summerside, 3,228 and Souris, 1,094. The provincial budget is balanced at \$750,000. The province is administered by a lieutenant-governor and a Legislative Assembly of 30 members, elected for four years—one-half by holders of real property and the remainder by adult general suffrage. The lieutenant-governor in 1922 was Murdock McKinnon; premier, John H. Bell. See CANADA.

PRINCETON UNIVERSITY, a non-sectarian educational institution for men, founded in 1746 and located at Princeton, N. J. In 1922-23 it had a faculty of 214 members, and 2,367 students. Figures as to value of the university's property not given, but its income for 1922-23 was \$1,372,870.28. John Grier Hibben, LL.D., is president.

PRINTING INDUSTRY. In its broadest sense the printing industry includes pulp and paper manufacture, publishing of books, newspapers and periodicals and the mechanical operations of printing and binding. This article deals only with the latter, actual printing and binding. This industry has developed very

largely into a manufacturing activity, rather than a job printing business. Or, rather, the larger printing houses have become factories, and only the small concerns continue to be job printers. The business of turning out a half million copies a day of a great newspaper, or two million copies a week of a popular weekly, is entirely different from that of the printer who prints "anything from a visiting card to a poster." The development of the industry has been more and more specialized, until there were at the beginning of 1923 about 2,500 newspaper plants for manufacturing the daily and Sunday newspapers, probably 500 plants classed as periodical printers, which make a specialty of printing periodicals and magazines, about 14,500 newspaper printeries, often denominated country printing offices, the main business of which is printing a weekly or other newspaper, usually with a job printing department. The census lumps together over 13,000 plants as "book and job printing and publishing plants." Perhaps 500 of these are really book printers, manufacturing bound books; perhaps 1,000 are primarily catalogue printers, making a specialty of manufacturers, catalogues, price lists, and ornate circulars. Perhaps another 1,000 specialize in loose leaf work, and blank forms. Music printers are known to number 160. The 500 label printers include some very large concerns, as do the paper box printers. Others specialize in railroad work, ticket printing, druggists' printing, theatre printing, bank printing, political printing, etc.—each of these has its scores of printing establishments. And there might be mentioned a hundred other specialties which tend to separate printing plants into distinct manufacturing units. The lithographing, binding, electrotyping and engraving branches of the printing industry are treated separately in compiling census figures, but the great mass of these special manufacturing printeries are unknown to the reading public because not separated in census statistics.

The printing industry, as a whole, was prosperous in 1920, and suffered a severe relapse in 1921, with only slight gains in 1922. The year 1923 opened with a production perhaps 85 per cent of the normal, and very few printers making any material profits. The few which have returned to normal business and profit-making are located mainly in the Middle West, for there has been a sharp trend of business away from New York City as an Eastern center. The cause of this is high costs. The printers of the metropolis have become so burdened with high wages, high taxes, prohibitive rents, and all such exactions as come with modern city politics and perfected unionism, that they have had to charge prices much higher than are charged in the smaller cities and towns of the East. And they experience the further handicap that the Middle West is a better mailing point for periodicals, mail-order catalogues, and all large volume printing that is subject to the zone rates of the post office. At least 150 periodicals have left New York in the last three years. The great DeVinne Press, long known as the finest printing house in America, built up by Theodore L. DeVinne, acknow-

ledged dean of the industry for 25 years before his demise, was forced to close its doors for lack of trade, and went into voluntary liquidation in 1922. Zeese-Wilkinson Company, among the largest color-printing houses, moved to Long Island City to escape Manhattan rental. So did the large printing department of the Metropolitan Life Insurance Co. The Carey Printing Company, one of the largest in New York, moved the bulk of its printing plant to a suburb of Bethlehem, Pa. Harper & Brothers moved their plant to Camden, N. J., and the American Book Company to a suburb of Bloomfield, N. J. Other large printers are known to be contemplating removal to country locations, whereas the failures of small printing concerns have been numerous. The printing that has left New York has been in part distributed in the smaller cities, and a great quantity has gone to Chicago and Pittsburgh.

Chicago bids fair to become the center of the printing industry of the United States within another decade. In the census year of 1919 the State of New York turned out \$149,000,000 of commercial printing, as compared with \$110,000,000 for Illinois. In each case it is fair to estimate that three-fourths of the production came from the great cities of these States, so that Chicago has to go only about \$25,000,000 to catch up with New York. And as the great volume of printing on the Hearst magazine publications went to Chicago from New York since these statistics were gathered, it is apparent that the great center of Illinois is already close to New York printing production.

The census of 1919 shows a large gain in values for the book and job branch of the industry since 1914, but the gain is not real, being simply the result of marking up prices and values in the period of war inflation. Since 1919 there has been no advance. Here are the figures:

BOOK AND JOB PRINTING.

	1919	1914	Per cent increase, 1914-19
Number of establishments.....	13,089	12,115	8.0
Persons engaged.....	171,199	152,908	12.0
Proprietors and firm members.....	12,185	11,717	4.0
Salaried employees.....	36,009	28,070	28.3
Wage earners (average number).....	123,005	113,121	8.7
Primary horsepower.....	131,961	115,233	14.5
Capital.....	\$405,554,984	\$247,282,409	64.0
Salaries and wages.....	207,196,883	113,419,236	82.7
Salaries.....	65,720,640	35,005,536	87.7
Wages.....	141,476,243	78,413,700	80.4
Paid for contract work.....	32,243,303	17,658,478	82.6
Rent and taxes.....	19,853,046	10,278,667	93.1
Cost of materials.....	211,067,174	96,453,232	118.8
Value of products.....	597,663,228	307,330,861	94.5
Value added by manufacture.....	386,596,054	210,877,629	83.3

PROHIBITION. On 17 Jan. 1923, the United States completed three years of prohibition. For such an edict, applied on so vast a scale, there is no precedent in history, except the similar command of Mohammed, which however is imperfectly enforced even among the faithful. The subject is thus highly controversial. It is generally agreed that the disappearance of the saloon with its regrettable

associations has been a benefit. Also, the 18th Amendment, which prohibits the manufacture, import, distribution and sale of liquor, has to be accepted as a judgment of the people, approved by the Supreme Court despite all appeals, and in practical politics irreversible.

The battle between "the wets" and "the dries" thus rages around the Volstead Act under which the amendment is enforced. By this act, all liquor is held to be intoxicating which contains more than one-half of 1 per cent of alcohol. What "the wets" demand is a less rigid statute which would permit the import, manufacture, distribution of light wines and beers, not in saloons, but for private consumption and in restaurants, doubtless with meals. The dries oppose any such measure because they consider that it is bad in itself and certain to open the door to a much wider consumption of liquor than that so legalized.

Neither of the political parties, in announcing a platform at the Presidential election of 1920, included a wet plank, nor has legislation, modifying the Volstead Act, come before Congress as an issue. But there is, none the less, an evasion of the law, among some classes and in some areas, which has aroused widespread comment. President Harding himself in December, drawing attention to it at a conference of governors, called for the purpose. On the extent of this evasion must depend a sound estimate of the success of prohibition.

Broadly, it may be said that beer has been suppressed. It is too bulky to be made, carried and sold in defiance of the law. For a time, there may have been some home-brewing. This is, however, a troublesome process, the results are often not palatable, and the practice seems to have declined.

Wine may also be omitted from the larger calculation. Before the Amendment came into force, the wealthy stocked many large and valuable cellars. Large stocks may also be found in the neighborhood of some restaurants and cabarets, situated in cities which have always been wet. But wine has been, in the main, a beverage of the well-to-do; it has to be smuggled, if at all, across the ocean; and enhanced prices render it even more of a luxury than it was in the past.

The real struggle is over spirits. The moonshiner is the man who distills spirits in secret. The rumrunner seeks to smuggle spirits, either across the border of Canada or Mexico or by sea from Europe or the Bermudas. The quality of such spirits is now often unreliable. Labels can be counterfeited and are not the guarantee of sound distillation, that they used to be. As a consequence, there have been numerous cases of violent alcoholism, which contrast strongly with the general sobriety of the nation. Some thousands of persons have been poisoned by wood alcohol which causes blindness and death. These occurrences deter the public from illicit purchase of liquor but they also serve as an argument in favor of an authorized light intoxicant.

According to the dries, the demand for liquor is confined to persons of more or less advanced years and settled habits, who, in the course of nature, will die out. The wets,

on the other hand, point out that, in universities and colleges, there have been outbreaks of consumption among male students who previously abstained. Even young women, anxious to be in the fashion, take liquor and carry it, who, prior to the 18th Amendment, would not have thought of so doing. This attitude of mind is provoked by an idea that the Constitution of the United States was not intended to be a vehicle for sumptuary legislation, imposed on the individual. The somewhat irresponsible mood of the more comfortably situated young people, who have money for such vagaries, does not affect any appreciable proportion of the nation and time will show how far this mood is permanent. The contention that "anybody can get it" means anybody with the required cash; and while this fact suggests that the law is enforced more strictly on the poor than the rich, it also implies that the poor, being the majority, do not often obtain liquor in large quantity. The number of persons who can be said to take liquor in any appreciable quantity is difficult to estimate. Apparently, it lies between 5 and 10 per cent of the population. And the amount of liquor thus consumed per head, if compared with consumption in wet countries like Britain or France, is small. An important factor in the case is the attitude of women. In past years, they avoided the saloon and to-day, they seem to be aware that expenditure on liquor, being essentially a luxury of man diminishes the share of the family income which falls to the wife and the home.

It must be confessed that support of Prohibition, on the part of employers and politicians, is sometimes tinged with a certain inconsistency. Many a master believes in abstinence for his employees who does not himself abstain and not all Congressmen who have voted for the Volstead Act, themselves obey it. On the honesty of the agents who have to enforce the statute, this atmosphere of what has been harshly termed hypocrisy puts a severe strain. By the illegal release of spirits, immense sums of money may be made—sums quite sufficient to enrich an official or his accomplice for the rest of his life. In New York and elsewhere, flagrant cases of forged permits have been exposed. Similar inducements to graft are reported from custom houses and even from some of the less prominent legations at Washington where import is allowed under diplomatic privilege. The Province of Quebec has derived large profits and a considerable public revenue from the sale of liquor for transference across the border. It is held that this traffic has been restricted by an increasingly rigid vigilance on the part of the authorities.

There is no evidence that Prohibition has accentuated the evils which accompany the use of narcotic drugs. Few if any cases are alleged of individuals, cut off from liquor and taking to such drugs—the reason being simple. Of drugs and liquor, when both are prohibited, it is obvious that drugs will always be the more difficult to obtain. The man who is accustomed to liquor applies to his bootlegger before he risks addiction to opium.

Nor is there serious danger of the abuse

of the privilege allowed to religious communions which make use of sacramental wine. One or two irregularities have been reported but the volume of liquor, so misused, is almost certainly infinitesimal.

The permission to doctors to prescribe liquor is carefully safeguarded. Roughly, there are 150,000 doctors in the United States. About 40,000 of these live in the 24 States of the Union in which the prescription of liquor is forbidden. Of the remaining 110,000 doctors, not one-third have taken out permits so to prescribe. Each such doctor can only release 25 gallons of alcohol a year. It is thus safe to say that the whole volume of medical prescriptions do not equal 1,000,000 gallons annually—or less than a gallon a year for every 100 of population. By statute, doctors are forbidden to prescribe beer.

Evasion is thus due to smuggling and to the fact that liquor is retained in warehouses and is allowed to "leak," rather than to detailed causes like medical and sacramental provisions. Prohibition Commissioner Haynes stated, at the end of 1922, that, in his judgment, the demand for illicit liquor had diminished by one-half.

In the legal and authorized consumption of liquor, the reduction has been sensational. In the year ending 30 June 1917, the beer produced and consumed was 1,915,750,000 gallons. The figure for 1922 was nil. In 1917, the wine consumed as beverage was 47,587,000 gallons, which figure, for 1922, was again nil. In 1917, the spirits consumed as beverage amounted to 137,073,000 gallons, which figure, again, is nil for 1922. The stock of spirits on 30 June 1917 was 195,600,000 gallons. In 1922, it was 38,924,000 gallons. The spirits and alcohol used in that year of review for manufacturing and medicinal purposes was 19,462,000 gallons, of which as we have seen, not more than a million gallons was medicinal.

It is claimed by the dries that these severe restrictions in the release of alcohol have been of great benefit to the country. Savings banks deposits are increasing, the crimes and offenses due to liquor are diminishing, rescue and relief missions have less to do with the down-and-outs; and the evils of unemployment have been, it is said, greatly mitigated. The health of the nation is also excellent.

During the year 1922, the World League for Prohibition held a convention at Toronto. The first country to go dry was Iceland, in 1915. Owing to the fact that Spain threatened to decline a renewal of her trade treaties with the island which would have meant the ruin of the Icelandic fish trade, the import of Spanish wine has been again temporarily permitted.

In Finland, prohibition would have been adopted in 1907, had it not been for the Tsar's veto. In spite of trade treaties with France and Spain, it is maintained.

Norway adopted war-time prohibition of spirituous liquors and strong wines. In 1919, a national referendum authorized permanent prohibition which came into force in 1921. Under the pressure of a trade treaty, France has forced Norway to buy 500,000 litres of

wine from her, and Spain has obtained admission of a similar import.

In August 1922, Sweden held a referendum on prohibition, the result being—against, 919,579 votes; in favor, 889,311 votes; adverse majority, 30,268 votes. The city of Stockholm gave a wet majority of 117,057 while the rest of Sweden gave a dry majority of 90,000. Men were against prohibition by 60 per cent to 40 per cent; women were in favor, by 57 per cent to 43 per cent. The referendum thus shows that in Sweden as elsewhere, the dry sentiment is strongest among women and in rural areas.

Germany remains wet. In Russia, there appears to be a severe restriction on intoxicants and especially on spirits. Denmark is wet, chiefly because of the attitude of Copenhagen. In Italy, thousands of saloons are being closed. Switzerland, in 1908, prohibited absinthe and local veto is there under consideration. France is still a convinced "wet."

In the British Empire, Newfoundland and Canada prohibit liquor, with the exception of British Columbia and Quebec, where there is government control.

In Britain herself, there is only one declared Prohibitionist member of Parliament, nor is there any likelihood at present of legislation in that direction. In 1921, the Drink Bill amounted to £402,700,000 or two billions of dollars, compared with £166,000,000 for 1913. For 1922, the Drink Bill is estimated at a lower figure—say, £320,000,000—the drop being due to a diminished purchasing power among the people. It is fair to state that nearly half the Drink Bill is represented by taxation. Even in 1921, the quantity of beer actually consumed per head showed a decline from 27,600,000 barrels in 1913 to 18,500,000 barrels.

Over the right to search shipping, there has been some difference of view between the United States and Great Britain. The British decline to admit such right beyond the three mile limit. The United States desired the limit to be 12 miles. It has been laid down that (6 Oct. 1922), liquor is illegal on American vessels and that foreign vessels entering United States ports may not carry liquor even under seal (21 Oct. 1922). Against this latter decision, given by Judge Learned Hand in New York, an appeal was entered by the shipping companies concerned.

PHILIP WHITWELL WILSON.

PROHIBITION ENFORCEMENT. The United States Department of Justice, on 9 Jan. 1923, issued a summarized report in which it stated that 58,862 liquor cases had been reported to the 88 Department of Justice offices in the United States between July 1921 and December 1922. Convictions, it was asserted, had been secured in 27,301 of these cases with the result that jail sentences aggregating 2,045 years, 11 months and 24 days and fines totaling \$5,220,558.02 had been imposed. There were pending on the dockets of the Federal courts 21,850 cases undisposed of on 1 Dec. 1922, while over 3,000 new cases were developing each month. It was suggested that States that were dry before the Prohibition Amendment went into effect had less crowded court dockets than former wet States.

This was attributed to the fact that most of the liquor prosecutions in the dry States are made under local State prohibition laws. The reports would seem to indicate, said the Department of Justice's summary, "that the crowded condition of the Federal dockets was due for the most part to the fact that the prohibition burden was not being shared by the State courts, except in one or two States, notably Kansas and Wisconsin. It seemed possible that other States could reduce the number of pending cases if they so desired. In Kansas, where the State laws are being enforced in preference to the National Prohibition Act because they provide more severe penalties, the Federal courts have the cleanest dockets. The southern district of New York, which includes New York City, shows the heaviest congestion, and to Maryland the credit is due for having brought to trial and disposed of the largest percentage of prohibition cases in any Federal district. In the case of Maryland, however, it is pointed out that no prosecutions are had in the State courts and that the whole burden of enforcing the dry laws is put on the Federal courts." According to the report of the Commissioner of Internal Revenue, the prohibition force under the Federal Prohibition Commissioner increased during the fiscal year 1921-22 from 2,321 to 3,477 while the total payroll of the unit on 30 June 1922 was \$6,045,073, an increase of \$2,015,943 over the preceding year. Alcohol produced during the year amounted to 79,906,101.51 proof gallons, a decrease of 5,162,674.82 gallons as compared with the quantity produced during the preceding year. Alcohol withdrawn from the warehouses on payment of tax amounted to 16,363,301.85 proof gallons; tax-free withdrawals (that is, withdrawals for denaturation, for export, and for use of the United States hospitals, laboratories, colleges, and other educational institutions) totaled 63,147,767.22 proof gallons. Distilled spirits, including brandy (other than alcohol), withdrawn during the year amounted to 2,724,363.4 gallons, a decrease of 6,352,782.1 gallons as compared with the withdrawals of the preceding year. During the year 550 dealcoholizing plants were in operation as compared with 454 operated during the preceding year. Cereal beverages produced totaled 196,781,781 gallons, a decrease of 89,044,049 gallons compared with the preceding year. Withdrawals from bond, of alcohol and rum free of tax, for denaturation amounted to 59,549,919.6 gallons as compared with 38,812,138.7 gallons withdrawn for the same purpose the year before. During the year 33,345,747.91 wine gallons of denatured alcohol were produced. Of this amount 16,193,523.60 wine gallons were completely denatured and 17,152,224.31 wine gallons were specially denatured, as compared with 22,388,824.92 wine gallons of denatured alcohol produced during the previous fiscal year. Of the 1921 production 12,392,595.02 wine gallons were completely denatured and 9,996,229.90 gallons were specially denatured. Revenue taxes on wines and cordials totaled \$1,306,249.72 in 1922 as against \$2,001,779.87 in 1921; \$4,017,596.82 in 1920; \$10,521,609.14 in 1919; \$9,124,368.56 in 1918 and \$5,164,075.03 in 1917. The total wine production, in 1922, was 5,827,917.90 gallons. To 2,791,971.50 gallons of this wine, containing not more than 14 per cent

alcohol, was added brandy to produce 3,194,516.81 gallons of sweet wines with alcoholic contents varying from 14 to 24 per cent. During the year 3,014,364.88 gallons of wine were removed for medicinal and sacramental purposes (alcoholic content from 14 to 21 per cent). On 30 June 1922, 27,069,539.90 gallons of wine were on hand at bonded wineries and storerooms of which amount 19,105,926.30 gallons had not over 14 per cent alcoholic content.

PROTESTANT EPISCOPAL CHURCH.

Reports for 1922 show that in that year the Protestant Episcopal Church had 1,143,801 communicants, an increase of 39,772 over 1921. The smallest relative increase was in the New England States, the highest in the middle Atlantic, the average for the country $3\frac{1}{2}$ per cent. The total contributions of the Church were \$35,748,625.20, an increase of \$875,404.47 over the previous year. There were 6,924 clergy, an increase of barely 13. Ordinations to the priesthood were 139 and to the diaconate 89. Candidates and postulants for Holy Orders increased each about 10 per cent.

The outstanding event in the life of the Church in 1922 was the General Convention, 6 to 23 September inclusive, at Portland, Oregon. The general impression produced by that triennial gathering was that the Church keenly realized its duty in the matter of social betterment, a note forcibly struck by the pastoral letter issued by the House of Bishops, and the necessity of greater adaptability to changed conditions and new demands. As has been observed in recent meetings of the General Convention, the House of Bishops proved more progressive than the House of Deputies, where the lay delegates were more conservative than the clerical. The freer action of the House of Bishops may have been due to the fact that the bishops met and worked informally for a week before the General Convention. "The Presiding Bishop and Council" was partly reorganized and renamed "The National Council" by the General Convention. Its legitimate functions were defined as the co-ordination of the work of the Church especially in those large activities in which the Church as a whole was engaged. To it fall the general missions of the Church, the Nation-Wide Campaign for the raising of funds for the general work of the Church, educational work and social service and less important lines of activity. Bishop Gailor of Tennessee, was re-elected its president.

Prayer Book revision occupied a large part of the General Convention's time. Final action upon previous proposals for revision, all of which must be placed in two successive General Conventions, was small, but many important changes were proposed for final action in 1925. Hardly any service was left without important changes, enriching them and giving greater flexibility to the Book of Common Prayer. For the first time since the Reformation prayers for the dead were formally recognized, meeting a practice of all sections of the Church, especially since the Great War. From the baptismal services the statement that "all men were conceived and born in sin" was omitted, not for doctrinal reasons but because of widespread misunderstanding. The use of the burial service was no longer to

be forbidden in the case of suicides and unbaptized persons. Mistranslations and obsolete expressions were corrected in the Psalter. These changes are indicative of the spirit of the revision which would seem to be approaching a termination. Marriage and divorce received attention from the General Convention in an important canon forbidding members of the Church to enter upon a marriage in which either of the contracting parties is the husband or wife of any other person then living from which he or she has been divorced for any cause arising after marriage. Hitherto the clergy were forbidden to solemnize such marriages. Further regulation had been indefinite and variable, but a strong feeling had grown up that such marriages were forbidden by the Church. The canon was passed on the assumption that nothing new was thereby added to the discipline of the Church.

The ministry of healing was presented to the General Convention by a conservative report. It was generally felt that the matter called for a pronounced statement and that the practice of healing by spiritual methods was a part of the work of the ministry and should be recognized, encouraged and regulated. The matter was continued. Relation with other churches and communions in the direction of church unity have become more definite. Here the outstanding event was the recognition by the Orthodox Ecumenical Patriarch of Constantinople and his Holy Synod of the validity of Anglican Orders, a fact formally announced to the General Convention by the presiding bishop. This very important adjustment of the relations of the two communions is a result of the growing fraternization of the two, and especially of the personal contact of the Patriarch Meletios with the Church in England and in America during his exile from Greece and immediately before his election. The General Convention failed to come into affiliation with the Federal Council of the Churches of Christ. The bishops had favored such affiliation. It was lost in the House of Deputies by the narrowest possible majority on the part of the laity. The so-called concordate with the Congregationalists was advanced and episcopal consecration was made possible for those seeking it and wishing to continue to work outside of the Protestant Episcopal Church.

The place of women in the councils and governing bodies of the Church has been discussed in many quarters. In some dioceses they are admitted as members of the diocesan convention. Attempts were made to extend this practice, but proposals met defeat in Pennsylvania and Western Massachusetts. The General Convention refused to admit women. But by a new canon as to lay readers, women might be licensed to officiate as lay readers in churches in the same way as male communicants have long been licensed. The intellectual life of the Church was marked by no controversies nor trials for heresy. The organization of the Modern Churchmen's Union, an association of "liberal" churchmen, was of some significance. The appearance of the organization seemed opportune in the case of a party hitherto intensely individualistic when some more extreme members were taking positions widely felt as ultra-radical, e. g. "The Confessions of an Old

Priest" by the Rev. S. D. McConnell, D.D. During the year elections to the episcopate took place in seven dioceses; Alabama, Massachusetts, Tennessee, North Carolina, Pittsburgh, and South Dakota.

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PROTHERO, Sir George Walter, English editor: b. Wiltshire, England, 14 Oct. 1848; d. London, 11 July 1922. He was the son of Canon Prothero, Whippingham, Isle of Wight, and was educated at Eton, Kings College, Cambridge, and Bonn University. He was assistant master at Eton; lecturer under university extension scheme; tutor at Kings College, 1876-94; professor of history at Edinburgh, 1894-99; Rode lecturer, Cambridge, 1903; Lowell lecturer Boston, and Schouler lecturer, Johns Hopkins, Baltimore, 1910; Chichele lecturer, Oxford, 1920; governor of Holloway College, 1916, and member of the British peace delegation, 1919. He was made officer of the Crown of Belgium in 1919, was created knight commander, Order British Empire, 1920, and received the degree of LL.D from Cambridge, Edinburgh and Harvard. Sir George was a member of many learned societies, the author of many school histories and edited Voltaire's 'Life of Louis Quatorze,' with notes (1879); 'Sir J. R. Seeley's Growth of British Policy' (1895); 'Cambridge Historical Series,' of the Series of 'Peace Handbooks,' issued by the Foreign Office (1920); and was co-editor of the 'Cambridge Modern History.' He was the author of 'Life and Times of Simon de Montfort' (1877); 'Memoir of Henry Bradshaw' (1889); and 'Select Statutes and other Documents bearing on the reigns of Elizabeth and James I.' (1894).

PROUST, Marcel, French author: b. Paris, 1871; d. there, 19 Nov. 1922. His father was a professor of medicine and his mother a Jewess and from them he inherited a fortune of about \$15,000 to \$20,000 a year. This enabled him to indulge his tastes. He lived in Paris and went much into society. His book 'Plaisirs et les jours' (Pleasures and Days) impressed a select circle in France, including Anatole France, who dedicated a book to him. A little before the outbreak of the World War he began to publish his extraordinary work. 'A la recherche du temps perdu' (Memories of Times Past). As it stands it is in five books (one of which consists of three volumes): 'Du côté de chez Swann'; 'À l'ombre des jeunes filles en fleur'; 'Côté de Guermantes I et II'; and 'Sodome et Gomorrhe I et II,' 'Sodome et Gomorrhe III Ct IV' and 'Temps retrouvé' were in press at the time of his death. Much of Proust's writing has the feeling of improvisation. He was a psychologist and has often been compared to Balzac and to Huysmans. Proust's style is very unequal. J. Middleton Murry considers 'Memories of Times Past' the most important book written in this century and that his "new sensibility" makes him the harbinger of a fresh literary movement. Proust societies have been formed in England and Holland as well as in France.

PROVIDENCE COLLEGE, a non-sectarian educational institution for men, founded 14

Feb. 1917 and located at Providence, R. I. In 1922-23 it had a faculty of 16 members, 387 students, property valued at \$850,000, and an income of \$59,000. William D. Noon, O.P., S.T.M., is president.

PRUSSIA, officially Freistaat Preussen, one of the states of the German republic, until 1918 a kingdom since when it has been a republic. The area of Prussia is 113,852 square miles with a population of 37,075,240 in 1919. As a result of the Treaty of Versailles Prussia lost 20,377 square miles and a population of 3,705,898. The chief cities, with their populations, are: Berlin, the capital, 3,803,770; Cologne, 633,904; Breslau, 528,260; Essen, 439,257; Frankfurt-on-Main, 433,002; Dusseldorf, 407,338; Hanover, 392,805; Dortmund, 295,026; Magdeburg, 285,856; Konigsberg, 260,895; Duisburg, 244,302; Stettin, 232,729; Gelsenkirchen, 168,557; Cassel, 162,391; Elberfeld, 157,218. Education is compulsory between the ages of six and 14 years of age. About 7,200,000 are attending the educational institutions of the state, of whom 6,572,074 are in the elementary schools, and 38,050 in the universities. The last religious census showed 24,830,547 Protestants, 14,581,829 Roman Catholics, 415,926 Jews among the population. Agriculture is well developed, the chief crops being wheat, rye, barley, oats, potatoes and hay. Livestock on 1 Dec. 1920 were: 2,498,430 horses; 9,157,945 cattle; 4,017,950 sheep; 9,383,133 swine; and 2,651,422 goats. Coal is the chief mining product, the output being 112,028,796 metric tons in 1919, and 127,057,135 tons in 1920. Lignite production amounts to about 90,000,000 tons yearly and iron ore to about 5,500,000 tons yearly. Prussia has 24,196 miles of railways. The main lines are being electrified. Under the constitution of 1920 there is adult suffrage. There is a Diet or Landtag and also a State Council elected by the provincial assemblies. The latter body may reject legislation passed by the Diet. The Diet elects the Premier, who appoints the other members of the cabinet. Members of the Diet are elected for four years and the ministry has all the powers of the former King. The Premier in 1922 was Otto Braun. See GERMANY.

PSYCHOLOGY. The field of psychology was dominated during 1922 by the same interests, conflicts and preoccupations that governed it in 1921 and in the three preceding years. That is, the movement of thought and investigation in this field came during 1922 to nothing terminal or definitive. It is an undistinguished phase of the dramatic reintegration of interest which the World War caused among the psychologists. It remains on the whole, involved in the same problems and issues and presents the same indeterminateness of outcome. Progress, in so far as there can be said to have been any, has been progress toward clearness of statement of the over-ruling problems, toward a sharper drawing of the lines among the psychological sects, and toward a non-sectarian consensus regarding the character, the technique and factual implications of psychological data.

Prior to 1917, the course of psychology was only accidentally and whimsically determined by the problems of business and the needs of the

daily life. Its subdivisions and branches had their origins and carried with them the implications of the metaphysical and epistemological subsoils whence they sprang. The methods and problems of the laboratories were determined by them, and the practice of psychology as an art in the solution of the problems of business, government, or war was regarded—except in the case of advertising—as somewhat contrary to true scientific interest. The demands of the war gave patriotic sanction to such a practice. It drew large numbers of psychologists into the army; it turned their academic discipline overnight into a relevant and important instrument in the organization of victory. The hearing, the vision, the morale of aviators, of artillerymen and others, on which so much depended, became items for psychologists to test out, in the attempt to select only those best adapted for a special service. Intelligence, mental health, capacity to learn, and all the other qualities necessary in the officering and manning of an army, it became the task of the psychologist to determine and to evaluate. The major work of psychologists during the Great War was the work of uncovering, measuring and defining the qualities of men in order to determine who fitted where, and how, and how soon. The conditions of the problems were obviously objective; the adjustment of men to those conditions was equally objective; and the statement of the results of tests prophesying the degree of the adjustment needed, under the circumstances, to be of a comparatively simple mathematical character. Thus, so far as practical military ends were concerned, men ceased to be spirits with a consciousness; they were living organisms making observable and measurable adjustments to situations, adjustments that could be given a numerical value and could be stated objectively, as a sequence of behavior, without reference to consciousness at all. The organization of warfare served thus to give psychology in America a behavioristic and objectivist direction which it continued to follow in 1922.

At three points, however, objectivism failed to eventuate. One of these points was in the use of psychology as an art of healing the mind in that heterogeneous aggregation of disturbances that went by the name of "shellshock." In this field, which was much more highly elaborated in the British Isles and on the European continent than in the United States, it was found that the technique and conceptions of psychoanalysis were the most helpful. Underlying these there is, however, a mysterious, non-objective hypothesis of "unconscious mind." The implications of this hypothesis are conservative of the traditional view of the nature of consciousness and of the conception that man has a spirit and a subjective life. Much of the argument in the field of psychology since the war has been involved in the natural attempt of the objectivist trend to divert the psychoanalytic stream into its own courses. It was variously pointed out that psychoanalysis is deterministic, that it seeks to identify the causes of human behavior, that it treats the causes as controllable, that all the complicated mechanism of "the unconscious" the complexes and so on, are in the end reducible to a situation involving response to a stimulus;

that the complication of such a situation into a complex can be treated effectively as special and often intricate instance of the "conditioned reflex." The tendency in 1922 continues this absorption and restatement of Freudian psychology in behaviorist terms.

Another point where, during the war, objectivism failed to eventuate in social psychology. The passions of warfare had everywhere consolidated and personified the multitudinous diversities of nations and nationalities into psychological individuals, with unchangeable uniquely characteristic traits. What these traits were depended on whether they were attributed to friend or enemy, to groups feared, hated, despised, admired, etc. The practice was old. The war enormously increased its volume and intensity. It carried over into peace-times in special ways. These special ways made extensive use of the conception of instinct and the conception of intelligence. Both were conceived of as hereditary and immutable, and as independent of time, place and circumstances. Both were used extensively after the war—even by professional psychologists—in the service of group hatreds, fears and other passions to glorify one group and damn another.

Against the background of this usage there arose in the psychological field a controversy over the existence and character of instincts and a controversy over the nature and implications of the army and other intelligence tests. The year 1922 was particularly signalized by this controversy. The social and political implications of the reality of instincts and the hereditary character of intelligence were in the background of both sides of the controversy. Those who believe in democracy, in the power and value of education and the possibility of progress held that experience has shown that human nature is constitutionally flexible and changeable, that it is really able to learn, and that habit—which is the result of learning—rather than instinct, which is an unlearned power, is most characteristic of it. The same people urged that intelligence, assuming that an abstract quality, so nameable, exists and can be identified, cannot be fixed by heredity; that intelligence tests cannot reveal or measure hereditary intelligence; that on the contrary man has not one intelligence but many intelligences, determined to and by time, place and circumstances and that learning plays a large and progressive part in their articulation and definition. Those, on the other hand, who believe in predestined inferiors and superiors hold, on the whole, the opposite views both regarding instinct and regarding intelligence. The line between them and their opponents has been drawn more sharply in 1922. The effect of this on the whole, has been to throw more emphasis on objectivity, on the expansion and elaboration of the technique of psychological measurement, on the attempt to describe psychological events in terms of specific, measurable causes and to apply psychological conceptions to the specific problems of more and more departments of social life. In a word, in 1922 the winds of psychological doctrine were still blowing steadily toward behaviorism.

H. M. KALLEN.

PUBLIC HEALTH SERVICE, United States. History.—The United States Public Health Service is that branch of the Federal government charged directly with matters pertaining to public health, in so far as the Federal government has jurisdiction in these matters. It is a bureau in the Treasury Department, and is essentially a corps of commissioned and non-commissioned medical officers, aided by scientific and other classes of employees. The medical officers are secured in the same manner as are the medical officers of the Army and Navy, that is, by competitive examinations, open to graduates of reputable medical colleges. The origin of the Public Health Service dates back to the creation of the Marine Hospital Service, first authorized by an Act of Congress, 16 July 1798, providing medical services for sick and disabled seamen of the American merchant marine, either in hospitals maintained by the United States or in contract institutions. The duties imposed by Congress have increased and changed from time to time until the work of the Public Health Service has become almost entirely of a public health nature. This evolution in function is indicated in the evolution of its name, first, the Marine Hospital Service, later the Public Health and Marine Hospital Service, and finally the Public Health Service.

Functions.—While the ultimate control of purely local sanitary conditions has been construed under the Constitution to reside in the several States, being part of the police powers not delegated to the Federal government, the Public Health Service has a broad field in which it can actively engage in sanitary work. In general, it is charged with preventing the importation of disease from foreign countries, medical examination and treatment of arriving aliens; preventing the spread of disease from State to State; assisting the States, when requested, in times of epidemic, and in the solution of their various health problems, acting as their common agent; and with carrying out research work and investigation. More specifically, the Public Health Service operates all of the maritime quarantine stations of the United States and its insular possessions; it co-operates with State and local health authorities in suppressing epidemics, making sanitary surveys, and conducting studies of public health administration; it makes special investigations of diseases, such as tuberculosis, influenza, pneumonia, anthrax, pellagra, plague, trachoma, and typhoid fever; it supervises and controls the manufacture and sale of biologic products, such as viruses, vaccines, therapeutic serums, toxins, antitoxins, and analogous products, used in the prevention and treatment of diseases of man; and it disseminates public health information by means of various popular and scientific publications.

Organization.—The Bureau of the Public Health Service consists of a corps of commissioned officers of various grades, and of technical and clerical personnel. The activities of the Service are under the immediate supervision and in direct charge of the Surgeon-General, who administers its affairs through seven administrative divisions established by law, namely: Marine Hospitals and Relief, Domestic Quarantine, Foreign Quarantine, Personnel and Accounts,

Sanitary Reports and Statistics, Scientific Research, Venereal Diseases. There is also a General Inspection Service and a Section on Health Education.

ACTIVITIES FOR THE YEAR 1922.

Marine Hospitals and Relief.—The Division of Marine Hospitals and Relief furnishes hospital and dispensary treatment to Federal beneficiaries as provided by law, such as seamen of the merchant marine, patients of the Coast Guard, United States Employees' Compensation Commission, etc. On 31 March 1919, Congress authorized the Public Health Service to furnish hospital care and treatment for the World War veterans, patients of the War Risk Insurance Bureau. The magnitude of the operations involved in this work is shown by the records. At this time the Hospital Division had under treatment only about 1,500 patients. Two years later, March, 1921, there were 26,000 patients, an increase of over 1,600 per cent in two years.

In all, 264,000 patients were cared for by the Public Health Service, 14,397,500 hospital relief days furnished, 2,042,000 out-patient treatments given, and 1,459,200 physical examinations made. The hospitals for veterans, 57 in number (but not the marine hospitals) were turned over to the newly organized Veterans' Bureau, 29 May 1922. They contained an aggregate of 17,500 beds, 13,000 of which were occupied. The personnel included 900 physicians and dentists, mostly medical officers in the Reserve Corps of the Public Health Service, 1,400 nurses, and a total aggregate of about 11,500 hospital personnel.

The United States marine hospitals are not to be confused with hospitals belonging to the United States Navy or the United States Marine Corps. Although they are open to all veterans of the World War and certain other classes of beneficiaries prescribed by law, they were originally designed and are still operated chiefly for seamen from American merchant ships, their history dating back to 1798. At the close of the calendar year 1922 the Public Health Service was operating 24 marine hospitals and 119 out-patient offices or dispensaries. The hospitals are located at the following places:

Portland, Me.; Boston, Mass.; Vineyard Haven, Mass.; Stapleton, N. Y.; New York, N. Y.; Ellis Island, N. Y.; Baltimore, Md.; Norfolk, Va.; Savannah, Ga.; Key West, Fla.; Mobile, Ala.; New Orleans, La.; Carville, La.; Fort Stanton, N. M.; San Francisco, Calif.; Port Townsend, Wash.; Saint Louis, Mo.; Chicago, Ill.; Detroit, Mich.; Cleveland, Ohio; Buffalo, N. Y.; Pittsburgh, Pa.; Louisville, Ky.; Memphis, Tenn.

The marine hospital at Fort Stanton, N. M., is reserved for tuberculous merchant seamen and coast guardsmen, and has a patient population of over 200.

The marine hospital at Carville, La., is the National Lepers Home. Of the 1,200 lepers in this country, 176 men and women were, on 1 Jan. 1923, at Carville, all accommodations being filled to capacity. If appropriations pending in the Congress become available, the institution will be enlarged to accommodate additional lepers, of whom there is a waiting list of more than 100 who desire to enter the institution. A farm and dairy are conducted here and the lepers are

supplied with diversional occupation and recreation. There is a Catholic chapel at this hospital, and a Protestant church will soon be constructed.

The marine hospital on Ellis Island is used principally for immigrants, men, women, and children, detained on account of illness. It contains over 600 beds.

Domestic Quarantine.—The Division of Domestic Quarantine was established in 1910 for the purpose of administering service work in the control of interstate spread of communicable diseases and the suppression of epidemics under the quarantine laws of 27 March 1890, 15 Feb. 1893, and 19 June 1906. Included in the work of the Division are the following activities: (1) Enforcement of the interstate quarantine regulations of the United States. (2) Development of State departments of health, especially divisions of communicable diseases and sanitary engineering. (3) Control over water supplies used for drinking and culinary purposes on railroads, vessels, and other interstate carriers. (4) Sanitation of the national parks, in co-operation with the National Park Service. (5) Measures for the control and prevention of trachoma. (6) Studies of and demonstrations in rural sanitation. (7) The Annual Conference of State and Territorial Health Authorities with the Public Health Service. (8) Other contacts with State and Territorial Health Officials relating to health administration.

Little restriction of interstate travel was necessary during 1922. Operations of this nature were limited almost entirely to the supervision of the interstate travel of persons suffering from communicable disease. Approximately 2,500 water supplies used by interstate carriers (trains and vessels) were certified as free from the danger of conveying disease. Control measures to prevent spread were instituted in 40 outbreaks of typhoid fever among seamen. An advisory committee on official water standards was created. Through co-operative measures, sanitary engineering divisions were created in two States and services rendered to similar divisions in other States. Sanitary work in connection with water supplies and sewage disposal in national parks was continued. Six hospitals for the treatment of trachoma, a chronic and a very destructive disease of the eye, were in operation and other measures taken to reduce the prevalence of this disease. Bubonic plague has been present at intervals in California since 1900; in the State of Washington since 1907 (until 1916). In New Orleans since 1914. In 1920 the disease appeared in Pensacola, Florida, and in Galveston and Beaumont, Texas. Active anti-plague measures have been continued during the year.

Rural Sanitation.—During the period 1906 to 1917, the Public Health Service made intensive studies of sanitary conditions and disease prevalence in a number of cities and in certain selected rural districts. From these studies was developed the present co-operative work in rural sanitation. In this work the Public Health Service, the State health departments and the local authorities combine their

resources to establish and maintain an efficient county or district health service. The program includes general sanitary work, acute communicable disease control, the prevention of tuberculosis, malaria control, infant and maternity hygiene, school hygiene, and all other salient branches of health work. During the fiscal year 1922, the Public Health Service co-operated in demonstration projects in 56 counties distributed in the following States: Alabama, Georgia, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Mississippi, Montana, New Mexico, North Carolina, Oklahoma, Vermont, Virginia and West Virginia.

The following table gives a summary of the work in rural sanitation performed in 1922:

Persons reached by public lectures.....	277,000
Sanitary inspections of premises.....	104,000
Physical examinations of school children.....	142,000
Number found defective.....	91,000
Visits by nurses to cases of communicable disease.....	7,882
Visits by nurses to expectant mothers.....	3,094
Visits by nurses in the interest of child hygiene.....	9,629
Cases of dangerous communicable diseases quarantined.....	5,876
Examination of adults with advice as to health conservation.....	2,299
Treatments effecting correction of defects in school children.....	16,645
Inoculations against typhoid fever.....	25,540
Vaccinations against smallpox.....	38,241
Children immunized against diphtheria.....	3,887
Treatments of hookworm disease.....	2,240
Treatments, persons suffering from venereal diseases.....	23,985
Installations of sanitary devices for sewage disposal.....	13,964
Sewer connections made.....	2,301
Homes provided with wholesome water supply where contaminated water existed.....	2,950
Improved public milk supplies.....	539

Foreign and Insular Quarantine.—The operations of the Division of Foreign and Insular Quarantine consist principally in the enforcement of the United States quarantine laws and the medical inspection of aliens. The Public Health Service administers 64 quarantine stations in the United States and Alaska, and 29 in its insular possessions. Thirty-nine officers were on duty at 39 American consulates at foreign ports in Europe, Mexico, South America, and in the Orient.

During the fiscal year 1922, 18,985 vessels and 2,081,236 passengers and crews were inspected at the continental maritime stations. At foreign and insular stations there were inspected 10,322 vessels and 1,010,496 passengers and crews. A total of 8,889 vessels were fumigated or disinfected, and 7,823 were detained, either because of disease on board or because the vessel came from an infected port.

Yellow Fever.—Yellow fever foci were reported in a widely scattered area on the east and west coasts of Mexico, the east coast of Central America, and on the Atlantic and Pacific coasts of South America. During the fiscal year, cases were reported on five ships arriving at ports in the United States. All were detected in quarantine and the disease was kept out.

Plague.—Bubonic plague continued to be reported from practically every section of the globe, and in many of the important seaports having commercial relations with the United States. The spread of plague is the most difficult to prevent of all the quarantinable in-

fections, since it is primarily a disease of rats and may exist undetected in a port, confined to the rodent population, with only occasional human plague, its presence unknown to the authorities, or publicity deliberately suppressed to avoid commercial prejudice against the port. Despite the arrival at ports of the United States of a large number of vessels from plague infected ports, the infection was successfully excluded. This result can be attributed to the effective fumigation of vessels, either at the port of departure or at the port of arrival in the United States, by, or under, the supervision of the Public Health Service.

For the prevention of the introduction of plague, 6,721 vessels from foreign ports were fumigated at the United States quarantine stations, and 2,090 under the supervision of Public Health Service representatives at foreign ports.

Typhus fever.—This disease prevailed in many sections of the world, and cholera in Eastern Europe and in the Orient. Both diseases were successfully excluded.

Smallpox.—A virulent type of smallpox, continued to prevail in Mexico; and to prevent its introduction into the United States, incoming travelers from that section were vaccinated unless presenting evidence of immunity by recent vaccination or a previous attack of the disease. During the year, 74,833 persons were vaccinated at different ports on the Mexican border. A rather serious epidemic of smallpox also broke out in the Orient and necessitated the enforcement of vaccination, at ports of embarkation, of travelers destined to the United States or its insular possessions. For many years vessels have been fumigated with sulphur gas. It is safe, but not as effective as cyanide, which latter is dangerous to life during the process of fumigation. During the year, in co-operation with the United States Army, a new fumigant was developed which promises to be as efficient as cyanide, but which, owing to its lacrimatory and irritating characteristics, will warn of its presence, rendering it much safer than cyanide gas.

During the fiscal year ended 30 June 1922, there were examined by medical officers of the Public Health Service, 551,454, immigrants for the purpose of detecting physical or mental defects or diseases, as provided for in the United States immigration laws. In addition to the immigrants examined, there were inspected 783,193 alien seamen, as provided for in the act of 5 Feb. 1917.

The total number of immigrants certified as having some defect or disease was 25,815. Five hundred and forty-one were found to be suffering either from mental defects or from tuberculosis, 1,243 as being infected with "loathsome contagious" or "dangerous contagious" diseases, 17,172 as having some physical defect which would interfere with their ability to earn a living, and 6,859 to possess minor physical defects. Of the alien seamen found defective, 68 were certified for tuberculosis or mental conditions, 2,423 as being afflicted with "loathsome contagious" or "dangerous contagious" disease, 1,805 for conditions that would affect their ability to earn a living, and 418 for minor defects.

Of a total of 282,000 immigrants examined at Ellis Island (Port of New York), approximately 16,800 or five per cent were certified to. Of the 708 cases afflicted with "dangerous contagious" or "loathsome contagious" disease (including 490 certified to during the year plus 218 cases pending on 1 July 1921), somewhat less than one-half were deported. Of the 16,204 found to be suffering from physical defects, 585 were deported. Of the grand total of 16,828 immigrants certified to at Ellis Island as being mentally defective, tuberculous, afflicted with "dangerous contagious" or "loathsome contagious" disease or physical defects, 709 altogether were debarred from entry. Ninety-nine certificates were rendered at Ellis Island for mental defects.

Division of Personnel and Accounts.—

This division, as the name indicates, is concerned with the internal administration of the details of duty of the officers and employees of the service and the technical disposition of the records of expenditures and other financial transactions.

The following table gives the numerical distribution of the personnel by designation and activity as of 30 June 1922:

ACTIVITY	Regular corps	Reserve corps	Acting assistant surgeons	Attending specialists	Internes	Administrative assistants	Pharmacists	Scientific personnel	All other employees	Collaborating epidemiologists	Total
Divisions of bureau.....	12	2					2		232		248
Hospitals and dispensaries.....	37	78	71	65	20	18	19		1,895		2,203
Quarantine and immigration.....	50		144			6	4		648		852
Venereal disease control.....			48	3					29		80
Prevention of epidemics.....	6		43					11	131	4,166	4,360
Field investigations of public health.....	41	3	21				7	20	304		393
Purveying service.....	1					2	2		90		95
Veterans' Bureau.....	19	884									903
Second and third class stations.....	8	8	101	8					50		179
United States Coast Guard.....	1	8	4								17
Waiting orders.....	17										17
Miscellaneous.....	10	4									14
Total.....	202	987	432	76	20	26	38	31	3,379	4,166	9,357

Division of Sanitary Reports and Statistics.

Among the more important duties of this division may be mentioned the following.

(a) Collection, comparison and publication weekly of morbidity and mortality statistics of contagious and other diseases throughout the United States.

(b) Development of standardized records of illness in industrial establishments.

(c) Intensive field studies of morbidity in selected populations in co-operation with other divisions.

(d) Intensive statistical studies of specific diseases.

(e) Co-operative studies in child hygiene and in venereal diseases.

(f) Public health education. Among the educational activities of this section may be mentioned the following: During the fiscal year ended 30 June 1922, 116 new publications were issued, compared with 120 during the pre-

ceding year. The total number of copies of these publications and of reprints of previous documents distributed aggregated 949,460, as compared with 859,808 copies distributed during the preceding fiscal year. The 949,460 leaflets sent in response to 48,624 public requests do not include the publications printed and distributed by the division of venereal diseases. During the fiscal year 33 issues of mimeographed bulletins were prepared and issued by the public health service to newspapers, publishing agencies, and individuals. These dealt largely with the results of studies and investigations made by the Public Health Service. The section received 96 requests for stereopticon slides, and in response to these requests loaned 7,200 slides. The work of the stereopticon library has been greatly hampered, owing to the shortage of slides and to the lack of funds for making new slides. The section has received many requests for the loan of exhibit material, posters, and motion pictures, but compliance with most of these has been impossible because of the lack of funds.

(g) Compilation and publication of State and municipal laws and regulations relating to public health.

(h) Collection and publication of reports of

cases and deaths from quarantinable diseases in foreign ports. These reports are received from the following sources: Consular officers through co-operation with the State Department of the United States; officers of the Public Health Service stationed abroad; and foreign health officials through international Sanitary Bureaus.

Division of Scientific Research.—This Division conducts scientific field and laboratory studies, and in addition to these studies, has supervision of the manufacture and sale of viruses, serums, toxins, and analogous products, including arsphenamine and neoarsphenamine, in interstate traffic. The following outlines the activities of the Division during the calendar year 1922:

Industrial Hygiene.—Studies and Demonstrations: (1) Study of the occupational health hazards in the glass industry relating to the physical defects of glass workers, especially

those groups working in high temperatures. (2) Study of the character of physical defects among post office employees. (3) Survey of actual illumination conditions in certain Government departments, consisting of the study of various types of illuminating units, the degrees of illumination, the effects of improved illumination on production, and the relationship of eye defects to the character of the work and the degree of illumination. (4) Study of the physical defects of cement workers, the relationship of these defects to their occupations; the amount, character, and chemical constituents of the dust in different parts of the industry, and a comparison of the sickness records of these workers to workers in other trades, especially as relating to diseases of the respiratory organs. (5) Study of the physical defects among glass bevelers and mirror workers. (6) Study of the sickness records of employees of the Public Health Service as to the character of the illnesses, and the amount of time lost as compared to lost time from sickness of employees in private industry. This comparison brought out the fact that an average of 8.2 days was lost per year by each employee of the Public Health Service, as compared with 8.15 days in a private industry.

Laboratory Investigation.—(1) Investigation into the chemical and physiological aspects of fatigue. This work was carried on by the Office of Industrial Hygiene and Sanitation in co-operation with the Department of Physiology, College of Physicians and Surgeons, Columbia University, New York City. (2) The study of the physiological changes caused by varying degrees of temperature, ranging from body temperature to approximately 145° with relative humidity of 30 per cent, 60 per cent and 100 per cent, with and without air motion, at rest and while at work. (3) In co-operation with the Bureau of Mines, a comparative study of the relative efficiency of certain instruments used for collecting dust, and special tests of the new instrument devised by the Public Health Service and the Bureau of Mines. (4) In co-operation with the Bureau of Mines, a study of the health hazards of the petroleum industry, especially as relating to the poisonous fumes generated in the refining processes. (5) In co-operation with the Chemical Warfare Service of the War Department and the Foreign Quarantine Division of the Public Health Service, a study of new gases for use in ship fumigation, leading to the development of a simple process for generating cyanogen chloride, a gas which combines the efficiency of hydrocyanic gas with the warning effect of a tear gas. (6) In co-operation with the Yale University Medical School Laboratory, the study of the flow of air through orifices and the efficiency of various types of ventilating apparatus, especially as concerned with the distribution of air through straight and tapered ducts for suction currents both with and without branch pipes.

Malaria Studies and Demonstrations.—Fifty years ago malaria was a common occurrence throughout the entire Mississippi Valley, extending as far north as southern Canada, and on the Atlantic Coast to Massachusetts, but following agricultural development and im-

proved living conditions, the habitat of endemic malaria has been greatly restricted, until now the disease is of serious sanitary importance only in the South Atlantic States, the lower Mississippi Valley, the Gulf States, and in the Sacramento and San Joaquin valleys of California. During 1922, many problems bearing upon the transmission and eradication of malaria, were investigated by the service both in the laboratory and in the field.

Stream Pollution Investigations.—In the study of stream pollution, which the Public Health Service has pursued for a number of years, the chief work carried on in 1922 was a study of the pollution and natural purification of the Illinois River, which receives the sewage of the sanitary district of Chicago through the Chicago Drainage Canal.

That polluted streams undergo, more or less, natural purification, tending to render their waters less dangerous and offensive, has long been known. The studies of the Ohio and Illinois rivers have now afforded a fairly exact measure of the extent of such purification, demonstrating, for example, that the sewage bacteria present in the Ohio River above Louisville (600 miles below Pittsburgh) are about 20 per cent in winter and in summer usually less than 2 per cent of those discharged into the river and its tributaries from all the sewered communities above.

Survey of Sewage Treatment Plants.—During 1920 the Public Health Service began a critical study of the construction, operation, and efficiency of 15 municipal sewage-disposal plants, selected as representative of the various types in most common use in this country. The conclusion of most general interest indicated by the study is that the plants surveyed, representing quite diverse methods of treatment, are, with few exceptions, showing considerably higher and more uniform efficiency than has been commonly supposed. It appears that considerable improvements can be made in operation, and in details of design, but that the basic principles of the processes represented are sound.

Studies in Child Hygiene.—Research and educational work has been conducted in eight States. In two counties in Florida 10,000 school children were examined. Particular attention was given to a study of the influence of local conditions influencing growth and development of children, child morbidity and mortality. Valuable information was obtained regarding the effect of hookworm, extent to which vaccination was practiced, age-grade status of children and value of health scoring records. Studies of posture in relation to nutrition, physical defects, school grade and physical training were included in a survey made in one city in the State of Indiana. Co-operative studies of health conditions of 12,000 school children in Maryland were continued. Mouth surveys to determine the presence of dental caries and septic mouth conditions were made in four States, 10,000 children being examined. Studies were made of the physical condition of children residing in heavily infected malarial districts as compared with that of children of similar stock residing in more healthful locations within the

same State. Associated with this study were special investigations to determine the relative values of enlarged spleens and blood smears as indices of chronic malarial infection, and the practical utilization of the information acquired in this manner for the eradication of malaria. As a result of these activities, popular interest in school health supervision has been stimulated and large numbers of children found suffering with remediable defects have obtained relief.

Hygienic Laboratory.—The Hygienic Laboratory of the Public Health Service, one of the foremost research institutions of the world, has, since its beginning, been occupied with the study of diseases of man, carrying on pathological, zoological, pharmacological, bacteriological, chemical, and physiological work. It also has charge of maintaining the purity and potency of biologic products sold in the United States. Following are some of the accomplishments of the Hygienic Laboratory during 1922:

1. The further study of tularæmia has shown that this new disease of man is transmitted from rabbits to human beings either by means of insects or more directly by the handling of contaminated rabbits. Regardless of how the disease is acquired, the result is a prolonged illness which incapacitates the individual for several months. By showing the avenues through which the disease is carried, it becomes possible to inaugurate effective protective measures. A number of officers and employees of the Hygienic Laboratory who have engaged in work on tularæmia have acquired the disease and passed through the long illness which always ensues.

2. Research on Rocky Mountain spotted fever has not shown any particular advance, but it is necessary to record the death of Laboratory Assistant William E. Gettinger at Hamilton, Mont., which is the second fatality occurring in the Public Health Service in connection with the study of this disease, the first having been that of Dr. T. B. McClintic, who died in 1912.

3. The first epidemic of Malta fever which has occurred in the United States was investigated, and its relation to contaminated goats' milk was clearly established.

4. The practical usefulness of the current strains of smallpox vaccine in preventing smallpox has been thoroughly established in connection with the serious and fatal outbreak which occurred in Kansas City, Mo.

5. A preparation which appears to have a promising field in the treatment of syphilis and certain other diseases has been carefully investigated, and a method of preparation worked out which it is believed will make this material available to a much larger number of persons than heretofore.

Investigations which have yielded useful, but not immediately important results, are: Studies of pneumonia, in which new methods of immunization have been developed. These procedures, while experimentally satisfactory, may or may not lead to workable measures applicable to man. Poliomyelitis and meningitis have been studied, but no noteworthy advance has been accomplished. A method of standardizing pituitary extract, an important drug, has been practically completed.

Food Poisoning Investigations.—As a result of these investigations made during the

period 1919-1922, definite information has been collected in regard to the conditions of manufacture which were responsible for recent outbreaks of food poisonings and intoxications, and it has been possible to formulate exact directions which should be observed in commercial canning in order that the product may be reasonably safe.

Research has been continued in botulism and other forms of food poisoning; in the travel of bacteria underground; in pellagra; and in the treatment of leprosy.

Division of Venereal Diseases.—This division was created in the United States Public Health Service by the Act of 9 July 1918. The duties of this Division as stated in the organic act are as follows: (1) to study and investigate the cause, treatment, and prevention of venereal diseases; (2) to co-operate with State boards or departments of health for the prevention and control of such diseases within the States; and (3) to control and prevent the spread of these diseases in interstate traffic.

The same act created the Interdepartmental Social Hygiene Board as a war-time organization to co-operate in the control of venereal diseases. At the end of the fiscal year 1922, it was the opinion of the Interdepartmental Social Hygiene Board that its function had come to an end, owing to the return of the United States to a peace-time basis, and, consequently, no appropriation was asked for its continuance for the fiscal year 1923.

The Division of Venereal Diseases of the United States Public Health Service, however, was created as a permanent organization, and its work has continually gone forward since its creation in 1918. The general plan for the control of venereal disease as carried on by the Division is grouped under three headings: (1) Medical, (2) Educational, and (3) Law-enforcement Measures, all of which are carried on in active co-operation with the various State boards of health.

Under medical measures are included the establishment of clinics, conducted under the supervision of State boards of health where persons infected with venereal disease can secure treatment at nominal cost or free of charge. More than five hundred such clinics are now in operation.

Another feature of medical activities is the securing of co-operation of physicians throughout the nation. Such co-operation includes the agreement to report cases of venereal disease to the State boards of health and through them to the United States Public Health Service, as it was felt that a knowledge of the incidence of syphilis and gonorrhea was necessary in order to intelligently continue a campaign for their control; and effecting arrangements with private practitioners whereby they would treat at nominal cost persons who were unable to make full payment for treatment. Arsphenamine for the treatment of such persons infected with syphilis is furnished in many cases without cost either by the State board of health or by the United States Public Health Service. This co-operative work is progressing very satisfactorily.

The aim under educational activities has been largely (1) to enlighten the public to a

knowledge of the venereal diseases and their inherent dangers, and to impress the people with the urgency of prompt and efficient treatment; and (2) to prevent the spread of these diseases by creating a public opinion to minimize opportunity of contact between infected persons and those not yet infected. A large number of pamphlets and some sets of slides, card exhibits and motion picture films have been prepared as instruments in this educational work. More than 36,400 lectures, attended by 5,464,000 persons have been given, and 6,400 motion picture showings have been given to more than 2,159,000 people. The State boards of health and the United States Public Health Service have distributed 28,640,000 educational pamphlets.

Under the law-enforcement section the following activities have been carried out: (1) Assisting in securing the passage of State laws and city ordinances having for their aim the control of venereal diseases, and urging the enforcement of laws which have been so passed; and (2) an active campaign has been conducted against the open house of prostitution and a large number of States have adopted the so-called "Injunction and Abatement" laws directed at owners of property the tenants of which engage in prostitution.

A great many municipal ordinances have been passed supervising the conduct of public dance halls; licensing hotels and rooming houses, with provisions for forfeiture of the license of any establishment tolerating immoral acts; and prohibiting the use of taxicabs for purposes of prostitution. By vigorous enforcement of the White Slave law, the Federal Government has to a great extent broken up the interstate traffic in women and girls.

Laws have been advocated also against the sale of nostrums, or so-called "quack" remedies, for the treatment of syphilis and gonorrhea, as it was recognized that in most cases such nostrums are of absolutely no value and the false sense of security given to an infected person by their use would restrain him from securing advice and treatment from a competent physician or specialist or at an official clinic for the treatment of venereal disease.

An important feature of the work of controlling venereal diseases in the United States has been the Federal appropriation for allotting funds to State boards of health for this work. A total of approximately \$3,000,000 has been appropriated to be made available to such States as conform to certain rules and regulations promulgated by the Secretary of the Treasury, for the control of these diseases.

One clause of these regulations requires that each State, in order to secure its allotment of the Federal appropriation, must set aside at least an equal amount for venereal disease control work. As a result of this continued stimulating aid by the United States Public Health Service, State appropriations for this work are steadily increasing so that for the fiscal year 1923 while the Federal appropriation amounted to \$225,000, the State appropriations amounted to \$818,135.96, or a total of \$1,043,135.96 available for this work. Every State in the Union has met the requirements of these regulations and it is felt that this one

method has been the most valuable means of effecting proper standardization of State board of health activities in venereal disease control.

While it is too early to attempt to place a proper value upon this work in actually controlling the venereal diseases, yet with the State boards of health efficiently organized and actively working on this problem as they now are, and with the more than 500 official clinics into which have been admitted 467,250 new cases, and which have given 6,105,566 treatments, there can be no doubt that the activities of the United States Public Health Service in co-operating with the State boards of health will be made evident as a most potent force in venereal disease control.

HUGH S. CUMMING,
Surgeon-General, United States Public Health Service.

PUBLIC SCHOOLS. See EDUCATION, PROGRESS IN.

PUBLISHING. According to *The Publishers' Weekly* there were 5,998 new books published in the United States during 1922. New editions numbered 865; pamphlets, 1,775. The same authority quotes *The Publishers' Circular and Booksellers' Record* as stating that 7,212 new books, 266 translations, 1,276 pamphlets and 2,088 new editions were issued in Great Britain in 1922. Among the books published in the United States during the year, fiction stood first at 758; religious books, second at 568; children's books, third at 462; poetry, fourth at 446, while sociology and history tied at 403. In Great Britain fiction was first with 1,046; religion, second, with 557; sociology, third, with 523; juvenile books, fourth, with 501; poetry, fifth, with 442. *The Publishers' Weekly* gave the following book production figures of other countries for the year 1921: Czechoslovakia, 5,838; Denmark (1921-22), 3,673; France, 7,683; Germany, 34,252 (includes 22,145 new books); Holland, 4,431; Italy, 6,293; Luxemburg, 92; Norway, 1,033; Spain (copyright registrations), 2,528; Switzerland, 1,332; Uruguay, 539.

PUGET SOUND. College of, a Methodist co-educational institution founded in 1903 and located at Tacoma, Wash. In 1922-23 it had a faculty of 18 regular members and 8 more in the Conservatory of Music; 309 students, property valued at \$195,000 and an income of \$72,000. President, Edward Howard Todd, D.D.

PUGILISM. See SPORTS.

PULITZER SCHOOL OF JOURNALISM. This school at Columbia University was founded and endowed by the late Joseph Pulitzer. It was opened in 1912 and in 1922-23 had an enrollment of 140 students. Dr. I. W. Cunliffe is director. The following is a list of the prize and scholarship awards announced in May 1922.

For the most disinterested and meritorious service rendered by any American newspaper during the year, a gold medal costing \$500. The *New York World*, for articles exposing the operations of the Ku Klux Klan, published during September and October 1921.

For the best history of the services rendered to the public by the American press during the preceding year, \$1,000. No competition.

For the best editorial article written during

the year, the test of excellence being clearness of style, moral purpose, sound reasoning and power to influence public opinion in the right direction, \$500. Frank M. O'Brien for an article entitled "The Unknown Soldier," published in the *The New York Herald* on 11 Nov. 1921.

For the best example of a reporter's work during the year, the test being strict accuracy, terseness, the accomplishment of some public good commanding public attention and respect, \$1,000. Kirke L. Simpson of the Washington staff of the *Associated Press* for articles on the burial of "The Unknown Soldier" published on 9, 10 and 11 Nov. 1921.

For the best cartoon published in any American newspaper during the year, the determining qualities being that the cartoon shall embody an

idea made clearly apparent, shall show good drawing and striking pictorial effect, and shall be helpful to some commendable cause of public importance, \$500. Rollin Kirby of the *New York World*, for a cartoon "On the Road to Moscow," 5 Aug. 1921.

Traveling Scholarships: Robert Arthur Curry, Nassau, N. P., Bahamas; Zilpha Mary Carruthers, Denver, Col.; Robert Henry Best, Spartanburg, S. C.

PURDUE UNIVERSITY, a State co-educational institution, founded in 1864 and located at West Lafayette, Ind. In 1922-23 it had a faculty of 298 members, 3,000 students, property valued at \$3,214,760 and an income of \$1,608,765. Edward C. Elliott, Ph.D., is president.

Q

QUAKERS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

QUANTUM THEORY. See PHYSICS.

QUEBEC, a Province of the Dominion of Canada lying between Ontario and New Brunswick and to the north of the United States. It has an area of 703,653 square miles and in 1921 had a population of 2,361,199. Quebec, the capital, has a population of 95,193. Other cities are: Montreal, 618,506; Hull, 24,117; Verdun, 25,001; Sherbrooke, 23,515; Three Rivers, 22,367; Westmount, 17,593; and Lachine, 15,404. The finances of the Province for the fiscal year ended 30 June 1922 show a surplus of \$5,033,420, which exceeds that of all the other Provinces for the last five years. The government announced its intention to use this surplus for education, for the construction of highways, for public charity and for other development. Ordinary receipts were \$21,609,396 and ordinary expenditures were \$16,575,976. The Government is vested in a Lieutenant-Governor and a responsible Ministry, assisted by a Legislative Council of 24 members, who are appointed for life, and a Legislative Assembly of 81 members elected for five years. Women are not enfranchised and are ineligible for election to the legislature. The Lieutenant-Governor in 1922 was Sir Charles Fitzpatrick. Premier, L. A. Taschereau. See CANADA.

QUEENS COLLEGE, a Presbyterian educational institution for women, founded in 1857 and located at Charlotte, N. C. In 1922-23 it had a faculty of 24 members, 275 students, and property valued at \$600,000 approximately. Income figures not given. Rev. W. H. Frazer, D.D., is president.

QUEENSLAND. See AUSTRALIA.

QUICKSILVER. Preliminary figures showing the production of quicksilver in the United States in 1922, compiled by F. L. Ransome, of the United States Geological Survey, give a total of 6,497 flasks, of 75 pounds net, as compared with 6,339 flasks in 1921, which was the

smallest annual output in the 72 years of recorded production of domestic quicksilver. In 1922 California produced 3,494 flasks, Texas 2,725 flasks, and Nevada and Oregon 278 flasks. In California 4 mines were productive, but the output from all but the New Almaden group was very small. The New Idria mine continued non-productive but the old Redington or Boston mine at Knoxville, Napa County, which has lain idle for many years, yielded some quicksilver and will probably be a larger producer in 1923, as a rotary furnace has been installed. In Texas the Chisos mine, in the Terlingua district, Brewster County, yielded more quicksilver than any other mine in the United States. The Mariscal mine, near McKinney Springs, in the same county, was also productive. Prospecting was in progress at the Waldron mine, in the Terlingua district, 95 miles south of Alpine. In Nevada the only production recorded was made from deposits in the Pilot Mountains, east of Mina, in Mineral County. The output from Oregon was practically negligible. The average price of quicksilver in 1922 per flask of 75 pounds, as calculated from quotations by the *Engineering and Mining Journal-Press*, was \$58.95 for New York and \$57.78 for San Francisco. The price declined from \$51 New York, and \$50 San Francisco, early in January, to \$48 New York, and \$47.30 San Francisco in February. From the first of March the rise was fairly steady to \$74 New York, and \$71.30 San Francisco at the end of the year. The Tariff Act of 1922, which went into effect on 21 September, placed a duty on imported quicksilver of 25 cents a pound equivalent to \$18.75 a flask. At the end of the year the directors of the great Almaden mine, in Spain, where extensive improvements have been in progress, reduced the price of quicksilver at the mine to the equivalent of about \$45 per flask. No important additions to known resources of domestic quicksilver were made during 1922, but the effect of the new import duty will probably be seen in a moderate increase in production in 1923.

R

RABIES. See VETERINARY MEDICINE AND SURGERY.

RADCLIFFE COLLEGE, a non-sectarian educational institution for women, founded in 1879 and located at Cambridge, Mass. In 1922-23 it had a faculty of about 150, all members of Harvard University faculty, 728 students, property valued at \$3,000,000 and an estimated income of \$375,000 (estimate based on 1921-22 income). Le Baron R. Briggs, LL.D., is president.

RADIO TELEPHONY AND TELEGRAPHY. During the past eight or ten years a number of important refinements have been added to the wireless telegraphic and telephonic arts, notably the three electrode vacuum tube, the invention of Dr. Lee De Forest, and improvements to that instrument by several inventors, also improvements in the circuits in connection with the said tube by Armstrong in the addition thereto of the so-called regenerative circuits.

Prior to the introduction of the three electrode vacuum tube (termed the audion by Dr. Forest, from audible and ion) there were in existence many amateur wireless transmitting and receiving stations throughout this country. Practically all of these stations employed crystal detectors of various kinds as receivers, although the Fleming valve, or two electric vacuum tube, was also employed. Indeed government and commercial wireless stations as well, were then also limited to the use of the Fleming valve, and to crystal or electrolytic detectors. Even to-day crystal detectors are in extensive use in radio, especially by amateurs. While fair results were obtained by the use of such detectors it was really not until the arrival of the audion or three electrode tube, acting as a wireless detector and amplifier of incoming currents, together with the said improvements in that tube and the local circuits, that the important, indeed revolutionary, advances now achieved, both in wire and wireless telegraphy and telephony were made. Thus long distance land telephony, as from New York to San Francisco, was made practicable only by the employment of a modified form of the audion as a repeater from point to point across the continent. (See article TELEPHONY, in THE AMERICANA.)

The extensive and successful use of the three electrode vacuum tube as a receiver and an amplifier of wireless signals in the new art of broadcasting also has contributed largely to the amazing success and popularity of that new art. Some idea of the growth of amateur wireless stations in this country will be derived from the fact that while in, say, 1919 there were perhaps 100,000 such stations in operation, it is estimated that to-day there are probably over 880,000 such stations.

Not only has the audion largely displaced all other types of receivers in wireless telegraphy and telephony, but it and the two electrode

vacuum tube are also in a fair way to displace all other types of radio transmitters, including the generator type, since these tubes have been found to provide an economical, reliable and efficient transmitter of continuous waves (C.W.) for telegraph, telephone and power circuits. Indeed it is perhaps not too much to say that the utilization of the vacuum tube, acting as a generator of continuous waves for radio transmission, is only second to the use of that instrument as a detector and amplifier in receiving. It will therefore be largely, but not exclusively, to the use of the vacuum tube and to the apparatus used as radio transmitters and receivers in broadcasting and otherwise that the present article will be devoted. The ramifications of this general subject however are now so varied and extensive that anything like a complete discussion thereof is entirely beyond the scope of an encyclopedic article. This indeed would require treatment of text book dimensions. Fortunately the subject has received such treatment and many excellent text books are now available to the student, a number of which will be mentioned in the bibliography at the end of this article.

Electrons.—In the practical development of vacuum tube receivers as used in radio, it became obvious that the successful operation of this tube was due to the ability it possesses of releasing electrons from the heated filament within the tube. Some place therefore will be given to this vitally important subject in this relation. It may be of passing interest to note that in the preparation of the book entitled, 'Wireless Telegraphy,' by the present author, the first edition of which was written in 1900, it was conceived at that comparatively early date in the art that the electron would ultimately be found to play an important part in the electrical arts and especially in wireless telegraphy and telephony. A section captioned "The Electronic Theory" was therefore introduced in the book in which what was then known of the electron was very briefly set forth, and from that section extracts bearing on the theory of the electron will now be drawn.

From time immemorial it has been generally assumed that the atom of matter is indivisible—a body, as Clerk-Maxwell tersely put it, "that cannot be cut in two"; but within a comparatively recent period (1896) a new theory has been evolved, according to which the material atom is made up of electric units or corpuscles termed electrons. Helmholtz and others contended that the existence of electrical atoms followed from Faraday's laws of electrolysis; and Johnstone Stoney (to whom is due the term "electron") showed that each chemical ion of the decomposed electrolyte carried a definite and constant quantity of electricity; and since these charged ions are separated on the electrodes as neutral substances, there is an instant, however brief, when the charges must be capable of existing separately as electrical atoms. To ac-

count for the phenomena of current electricity, etc., by the electronic theory, it was supposed that there are many so-called free electrons intermingling and interchanging with the electrons of the atoms, and which under the influence of an electric force, are capable of moving comparatively freely through metals or other good conductors; whereas, the structure of non-conductors is such that the electrons cannot move freely through them. Assuming that an action is constantly taking place in which the atoms of metals are split up into negatively and positively charged corpuscles which again recombine to form neutral atoms, Dr. J. J. Johnson noted that in the normal state the number of such electrons that recombine in the neutral atom will equal those that have been set free. Consequently, swarms of these electrons, moving in all directions, gain or lose energy by colliding with the atoms of the metal and acquire a high average velocity (about 10,000,000 centimeters per second). This swarm of electrons under an electric force, will be sent drifting along in a direction opposite to that force, thus constituting the electric current. Assuming also that these electrons are moving in a metal at said average velocity it might be expected that some of them would escape into the surrounding air, but to do so, Thomson states that the electrons would require to possess a certain definite amount of energy, for they are attracted by the positive electrons and probably by the neutral atoms as well which suffices to keep them within the metal. *It is known that the electrons escape from an incandescent wire, from a cold metal when exposed to ultra-violet rays, and from radium.* The freedom with which the electrons move depends upon the average velocity of the electrons, since if they are moving with very great velocity they cannot move very far before they come into collision with an atom of the metal, and thus the effect produced by the electric force is neutralized. The average velocity of the electron increases with the temperature, hence electric conductivity decreases with increased temperature. By the electronic theory, alternating current is due to a to-and-fro motion, or vibration, of electrons under the influence of a comparatively slow alternating electric force, while a very rapid oscillation of the electrons in a conductor sets up, by reason of their intimate connection with the ether, a disturbance in the latter in the form of the so-called electric-magnetic waves. It may be remarked that although the electrons under the influence of the rapidly oscillating force vibrate at a very rapid rate it does not follow that they traverse a large portion of the metal. It is assumed that the electrons of an atom are in stable orbital relation around one another, that they possess inertia, are mutually attracted and repelled, and in short, that each atom is a miniature solar system, in which the orbits of the various parts are calculated to be relatively as great as are those of the planets of that system. It is further assumed that the number and arrangement of the positively and negatively charged electrons in an atom are different for each element; the hydrogen atom having the smallest number, the uranium atom the largest. It is thus apparently by the number of electrons in an atom and by the particular manner in which they are

arranged therein that one atom is recognizable from another; analogously, perhaps, as different chemical combinations of molecules form different substances.

In general the foregoing epitome of the electronic theory corresponds fairly well with the existing views on the subject. In present day parlance it is said that the atom is composed of a certain number of negative electrons which surround a nucleus of positive electricity, termed the proton, this positive electricity attracting and thereby preventing the escape of the negative electrons. Normally, the electrons and the positive electrons in the atom are equal (that is, the positive and negative charges in the atom are equal) and therefore the atom itself is neutral. If one or more electrons are removed from the atom there is then an excess of positive electrons and the atom is positively charged, the extent of the charge depending on the number of electrons removed. If one or more electrons are added to an atom it is then more or less negatively charged. An atom negatively charged is termed a negative ion, one with a positive charge is termed a positive ion. As noted by Scott-Taggart, a number of the positive electrons of the atom affect its chemical nature. These positive electrons cannot be removed from the central core. The atom also possesses a number of electrons which may be withdrawn from the atom without affecting its physical properties. These are free electrons and are the electrons which take part in electrical phenomena. There are at least two views as to the cause which retains the electron in the atom: the one just given, namely, that the positive charge (the proton) or nucleus at the center of the atom is fixed; the other that there is a force at the surface of the conductor or filament that normally prevents the escape of the electrons from the filament, but when the energy of the electrons is sufficiently increased, by heating the filament, the electrons overcome the surface force and escape. In the vacuum or thermionic tube therefore as used in radio the results obtained are due to the fact that the heating of the filament in that tube increases the energy or velocity of the electrons to the point where they escape from, or are expelled from the filament, the number of electrons so released or expelled depending on the temperature of the filament which temperature increases with the current, of which fact advantage is taken in the use of this tube in the wireless arts.

With the foregoing brief discussion of the electronic theory, the practical operation of the vacuum tube in wireless telegraphy and telephony will now be considered.

The Fleming Two Electrode Vacuum Tube or Valve.—This valve was used in wireless telegraphy before the introduction of the three electrode valve. It performs, but in a different way, a similar function to that of the crystal detector, in that it rectifies the incoming alternating current waves from the aerial, thereby producing audible signals in the telephone receiver. A short digression may be made to add that the operation of the crystal detector (which followed the filings coherer detector in early wireless telegraphy), depends on the fact that such detectors are unidirectional, that is, they allow current through them in one direction only, or suppress one polarity of current in so much

greater volume than in the other direction that the result is a practically one direction current.

The Fleming detector and its circuits are shown theoretically in Fig. 1. In this figure A' is the aerial. $p.s.$ are the primary and secondary of the receiving tuning transformer, (vario coupler). VT is the Fleming valve or two electrode vacuum tube, consisting of the bulb, shown by a circle, the plate W, and the filament F. The variable condenser C and the secondary s form the usual tuning circuit. As previously stated, when a filament is heated to redness by the battery A (6 or 8 volts), it gives off electrons and it is found that if an outside source of alternating currents is attached to the tube at this time only negative currents will pass from the filament to the plate. In other words the space between the filament and the plate now possesses a unilateral conductivity and negative electricity will pass from the filament to the

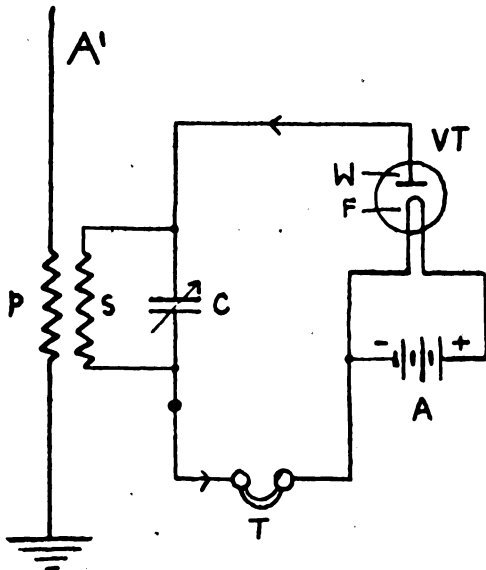


FIG. 1.—Fleming Valve or Two Electrode Vacuum Tube.

plate, but not in the opposite direction. When therefore alternating currents (spark transmission) arrive at the tuning circuit s from a transmitting station, only currents of negative polarity will pass through the circuit, FWsT, in the direction indicated by the arrows. This gives a unilateral current in that circuit which is heard as a tone in the telephone that in practice is broken into dots and dashes by a telegraph key. The Fleming valve detector in a modified form to that shown in Fig. 1 was at one time used by Marconi and others as a detector in wireless telegraphy, but it is no longer regarded as of commercial value in that capacity.

The Three Electrode Tube or Audion.—De Forest's great addition to the two electrode tube was the introduction of what is termed the grid, placed between the filament and the plate, which was found to largely amplify the incoming signals. This proved to be a device the importance and value of which in wire-

less telegraphy and telephony, and in other branches of electricity cannot be over stated. As one writer has well said: "The audion was first used as a radio detector (in 1906), but was subsequently found to be capable of performing a number of other important functions. In fact the addition of the grid to the two electrode tube resulted in a device of tremendous potentialities, and that can justly be placed in the same category with such fundamental devices as the steam engine, the dynamo and the telephone."

The great importance of this device was not fully realized at first and the theory of its operation was more or less a mystery to the inventor, as well as to other scientists of that time. (See the discussion of De Forest's paper on the audion, presented to the American Institute of Electrical Engineers, 1906. A. I. E. E. Proceedings, Vol. XXV.)

The three electrode audion tube circuit in simple form is indicated theoretically in Fig. 2. VT is the audion consisting of the bulb represented by a circle. G is the grid, P the plate and F the filament. A' is the usual

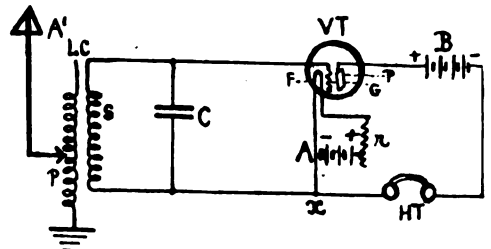


FIG. 2.—Simple Audion Circuit—Loose Coupler.

aerial. LC a loose coupler with primary p and secondary s . C is a tuning condenser. B is the potential or plate battery. A is the filament battery, r is a potentiometer for regulating the heating battery A. HT is the head telephone receiver.

The operation of the tube is virtually as follows: When the filament is rendered incandescent by battery A electrons are emitted from F. This makes the space in the tube conducting and the positive pole of battery B attracts the emitted electrons. This produces a current in the circuit PBF including the head telephone, but as this current is uniform the telephone is not affected. Assume now that the distant station transmits a radiofrequency alternating current wave of constant amplitude, termed a continuous wave, CW, (q.v.). When a positive polarity arrives at the variable tuning coil s the grid G receives a positive charge which attracts a greater stream of electrons from the filament, thereby increasing the current flow from battery B. The next polarity arriving at s is negative and the grid is now charged negatively. This retards or stops the flow of electrons from the filament and the current flow in circuit PBHTF is decreased or ceases. As alternating electromotive forces of radio frequency continue to arrive at the aerial the foregoing actions upon the grid produce in the said

circuit a pulsatory unidirectional current, too rapid to affect the telephone diaphragm. When, however, the continuous wave is modulated by voice waves spoken into a suitable microphone transmitter at the distant station, these modulations, being of audio frequency, on reaching the circuit P, B, H, T, F, in which the unidirectional current is flowing are reproduced as speech in the telephone receiver. In such cases the radio frequency wave acts as a "carrier" for the voice modulated waves set up by the transmitter at the distant station. It may, for possible clarity, be suggested that the foregoing result is the practical equivalent of what takes place in ordinary telephony between subscribers during an interchange of conversation. Thus when the telephone receivers are removed from their hooks the central exchange automatically places a battery current on the subscriber's telephone circuit which, however, being a constant direct current, is not heard in the telephones. When now a subscriber talks into the transmitter the battery current becomes a carrier current and, being varied according to the voice waves set up by the speaker, reproduces the voice of the speaking subscriber in the receiver as in the case of the radio circuit just cited.

The De Forest audion acting only as a single wireless detector was and is a pronounced advance over all previous radio detectors, and its scope of amplification by the addition of other amplifying detectors is greatly broadened.

The utility of this detector did not end here. In Fig. 2, the oscillating circuit SGF, is called the input circuit. The circuit PTF is termed the output circuit. It was found that the current in the output circuit is greater than in the input circuit due to the available increase in the potential on the grid. This is primarily due to the fact that by varying the potential on the grid it virtually gives that element control of the flow of electrons from the filament and therefore control of the current from the filament to the plate. This increase is also due to the fact that the grid is closer to the filament than is the plate and consequently with a given potential will repel or attract a greater number of electrons than will the plate. Thus Taggart found by experiment that with a certain tube, six volts negative potential at the grid completely neutralized 35.5 positive potential at the plate. Hence, if a means could be devised whereby the potential at the grid or plate could be varied from an extraneous source a still greater amplification of current could be obtained in the three electron tube. Such extraneous variation of potential at the grid or plate to be of utility must obviously come synchronously with and at the same rate (hundreds of thousands per second) as the variations due to the incoming radio frequency currents from the aerial; otherwise, the desired object would be defeated. It fell to E. H. Armstrong to discover a means by which this object could be attained. It will be noted that in the audion circuits the input or "tuned grid circuit" and the output or "plate circuit" are interlinked by connecting the hot filament of the audion at the point X with the tuned grid and the plate circuit. Armstrong rearranged these circuits so that resonance is imparted to

the plate circuit making it capable of sustaining oscillations corresponding to the oscillations of the tuned grid circuit. He also provided means supplementing the electrostatic coupling of the audion to facilitate the transfer of energy from the plate circuit to the grid circuit thereby reinforcing the high frequency oscillations in the grid circuit. These and other devices produce the "feed back" and reinforcement features of the Armstrong regenerative principle. (See Armstrong U. S. Patent No. 1,113,149—1914). One arrangement of the Armstrong device consists of an extra circuit and a coil termed the "tickler" placed in inductive relation to the secondary of the loose coupler LC as indicated in Fig. 3, and connected directly with plate P of tube VT. The currents from the aerial via the loose coupler set up corresponding currents in the tickler coil which falling on the plate are returned to the grid circuit by the feed back action of the tube. (See TELEPHONY, WIRELESS, in 'The Americana'), and thereby increase the strength of the signals in the tele-

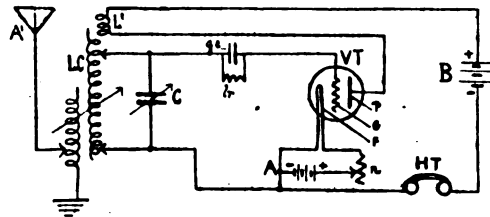


FIG. 3—Armstrong Regenerative Circuit—Tickler Coil.

phone receiver. In Fig. 3, in addition to the apparatus referred to, C is the tuning condenser, *gc* is termed the grid condenser which is shunted by a high resistance, *lr*, usually of several million ohms (megohms). This is termed a leak resistance, the general purpose of which is to allow a slow discharge of the grid condenser thereby preventing overcharges of the grid. For further information on the foregoing the reader may consult text books mentioned in the bibliography.

It has been claimed by certain writers that the regenerative device in the hands of experts will increase the original currents many times. Numerous possible variations of this regenerative circuit are described in text books and periodicals devoted to radio subjects. Indeed almost every amateur expert has his own regenerative circuit and "hook up" as the manner of arranging wireless circuits is popularly termed, examples of which hook ups will subsequently be given.

The Armstrong Super-Regenerative Circuit.—This arrangement of the three electrode circuit, also due to Armstrong, requires very skillful handling. Its amplifying power is great, so much so that the device cannot be used with the ordinary aerial, inasmuch as extraneous currents due to statics, etc., are also exaggerated to a high degree. Recourse is therefore had to the "loop" arrangement for ingathering the passing electro-magnetic waves of radio, by means of which super-experts are able to obtain excellent results. In the tuning of the ordinary regenerative circuit it is known that if the exci-

tation of the tube is pushed beyond a certain point the tube will oscillate and become inoperative for signaling. The inventor conceived that if a means were devised to stop the oscillations of the tube at its usual maximum output, amplification might be limited only by the capacity of the tube. Briefly, this result is obtained by the addition of an extra oscillator to the ordinary regenerative circuit by which means that circuit is alternately allowed to oscillate, and prevented from oscillating, at a frequency determined by the extra oscillator. For details of this device the reader may consult text books on this subject. (See Bibliography.)

Vacuum Tubes.—The tube or audion originally employed by De Forest was what is termed a "soft" tube, that is, one in which the exhaustion or vacuum is low and in which some gas remained. In some forms of tube detectors "soft" tubes are still employed. In tubes used for other purposes in wireless "hard" tubes are utilized. A vacuum is normally a poor conductor of electricity, but as already stated by taking advantage of the ability to release electrons from the filament of the tube the space within the tube becomes conducting, or ionized, and under proper conditions current or electrons flow from the filament. By suitable means such as are utilized in the audion, this current can be varied by varying the temperature of the filament, and in the other ways that constitute the audion a wireless detector. The exhaustion in a hard tube is not less than 1/600000 millimeter of mercury. (See Taggart's "Thermionic Tubes," p. 64.)

The general appearance of a three electrode tube is shown in Fig. 4, one type of which called the "radiotron," a trade name, much used in amateur wireless telegraphy and otherwise. Like other three electrode tubes the radiotron has three elements,—a filament, a grid and a plate. In the radiotron the filament is of tungsten; the grid consists of a special wire surrounding the filament, but is not in metallic contact therewith. Sometimes the grid consists of a small perforated metal plate. The grid controls the electrons within the tube in the manner previously noted. The plate in the radiotron is a metallic envelope that surrounds the grid and the filament. It serves also as a terminal of the potential or plate battery. These three elements are sealed in the glass tube. Four wires from the elements are hermetically sealed in the glass stem of the tube which wires lead out to four prongs on the base of the tube which connect to a suitable holding socket. One form of the radiotron, designed as a detector, is of the gas content type, or partly soft, experience having demonstrated that soft tubes are best for this purpose. In common with nearly all makes of tubes the most satisfactory results are obtained with this tube by a proper selection of the voltages of the plate and filament battery. Ordinarily, this particular design of tube is only intended to act as a detector, but by careful manipulation of the voltage of the plate and filament batteries the tube can also be used as an amplifier. Tubes of general similar appearance externally but completely exhausted or "hard" are used as radio and audio amplifiers. A modified form of the two electrode vacuum

tube (the original Fleming tube) is now employed under the trade name kenotron, as a rectifier of alternating current and as a power tube. One such two electrode tube is illustrated in Fig. 5. It is especially designed to rectify



FIG. 4—Three Electrode Vacuum Tube — Radiotron.

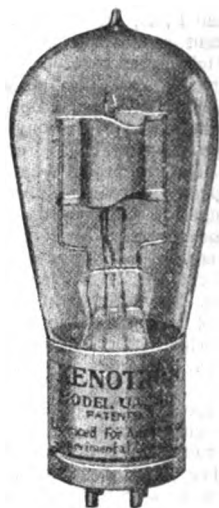


FIG. 5—Two Electrode Vacuum Tube — Kenotron.

alternating pulsatory currents for use with a radiotron transmitter (similar in external appearance to Fig. 4) delivering 5 watts for use in continuous wave telegraphy and telephone sets.

The possibilities of the vacuum tube as a source of electric power are enormous. Already power tubes are made that require 250 horse power to keep them supplied with electrical energy. Also a million watt vacuum tube has been developed in Schenectady, having an output of 40 amperes at 25,000 volts which serves as a rectifier to change alternating current to direct current and also to change direct to alternating current of any frequency, or to convert low frequency alternating currents to high frequency. It is expected that one such tube will be sufficient to carry radio telephonic signals across the Atlantic Ocean. It is not pretended that the foregoing mentioned apparatus exhausts the possibilities of the vacuum tube. It is indeed predicted that this tube will eventually displace many of the largest electrical apparatus now in use.

Until recently the current for heating the regular vacuum tube filament to a desired temperature has been supplied by a storage battery of six to eight volts. A storage battery requires comparatively frequent charging and its original cost, weight and upkeep have been virtually prohibitive of its use in many cases. The advent of vacuum tubes, such as the WD-11 and the UV-199, for use as radio detectors and amplifiers and capable of operation by dry cells has brought about remarkable economies, especially in amateur operation. These tubes function efficiently on a very weak current strength. Tests have shown the UV-199 tube to be very efficient as a radio frequency amplifier. One dry cell has been found sufficient to supply current to the WD-11

tube filament for 100 hours as a detector. This is about the same period that a six-volt storage battery will supply the ordinary vacuum tube filament with current on one charging. No doubt further improvements in this direction will follow.

Continuous and Interrupted Continuous Wave.—These terms are symbolized respectively in radio literature by the capital letters CW and ICW. The terms are employed to differentiate between the damped and undamped waves. (See article TELEGRAPHY, WIRELESS in *The Americana*.) The former are the waves developed by the spark gap method of generating high frequency oscillations. The latter are those established by the Poulsen and other arc generators of high frequency alternating current, and by machine generators such as the Alexanderson.

generator gave successful results. But as previously stated the vacuum tube transmitter is now the best known means of producing continuous waves. Fig. 6 shows a radio circuit in which two three-electrode vacuum tubes VT, VT are utilized as generators of continuous waves suitable for radio telephony; or these waves may be used for radio telegraphy by means of the rapid circuit breaker or "chopper" shown, for converting the continuous waves into an interrupted current wave in the manner described later. In the figure the plate electromotive force of, say, 350 volts is supplied by a 100 watt motor generator MG. By the "feed back" action between the elements of the tubes, VT, VT, oscillations automatically begin on the application of the plate voltage and high frequency oscillations are established in the circuit, which oscillations

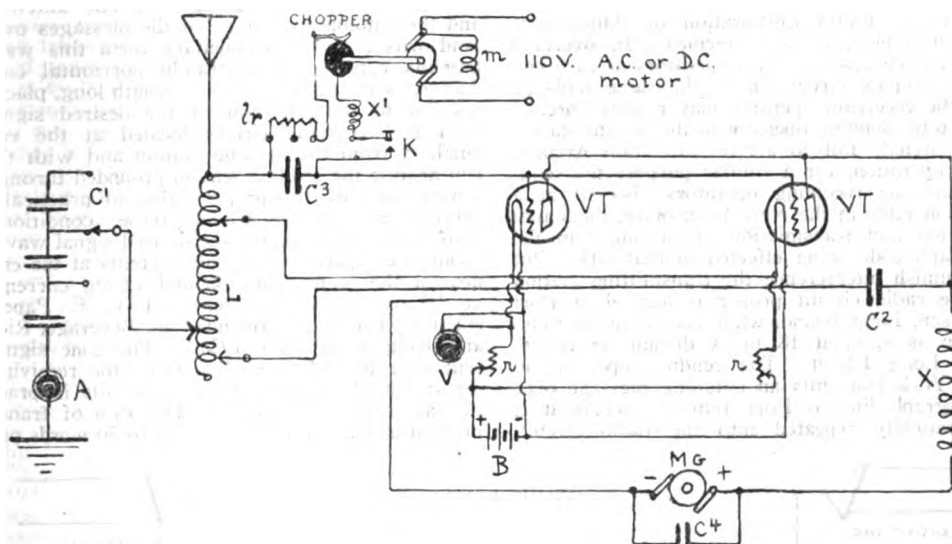


FIG. 6—Three Electrode Vacuum Tube Transmitters—CW and ICW Circuits.

(See article TELEPHONY in *'The Americana'*), also by vacuum tube oscillators. In the spark gap method of setting up radio frequency waves the oscillations are only maintained during a brief interval between the spark discharges, leaving a period between the discharges when there are no oscillations in the oscillation circuit at which time no waves are radiated from the aerial. In wireless telegraphy these intermittent oscillations are heard in the telephone as a tone which is broken into dots and dashes of the telegraph alphabet by a telegraph key. Radio telephony can not be carried on by such intermittent oscillations. (See TELEPHONY, WIRELESS in *'The Americana'*.) For telephony it is essential that practically continuous waves be maintained, that is, alternating current waves whose amplitude is uniform, in order that the wave itself shall give no sound in the telephone, but which wave may be modulated by the microphone in such manner that the voice or music shall be reproduced by the receiving telephone. In the setting up of such continuous waves by the arc generator fairly successful radio telephony was accomplished over short distances. And for long distance wireless telegraphy the Alexanderson

through the coupler L are thrown upon the aerial. In the figure X and X' are radio frequency choke coils, used for protective purposes. C' is the grid condenser. C' are aerial condensers. C' is a protector condenser. rr are potentiometers for the control of the filament battery B. A is an ammeter. V is a voltmeter. Ir is the grid condenser leak resistance. As before stated a continuous wave of radio frequency is not heard in a telephone receiver. To transmit telegraph signals by continuous waves therefore these waves are interrupted in such manner as to produce a tone in the telephone receiver, which tone is in turn broken into dots and dashes by the telegraph key K shown. The chopper, as shown in the figure, consists of an insulating disc on the periphery of which are placed metal segments. The chopper is rotated at a desired speed by a mechanical connection to a motor m. The grid leak circuit is made part of the chopper. Hence, when Key K is closed the rotating chopper rapidly opens and closes the grid resistance circuit, varying or modulating the continuous wave and producing the tone mentioned. When key K is open the tone ceases and by manipulation of the key telegraph signals

are transmitted. By means of a telephone transmitter suitably placed in the oscillating circuit, or by properly attaching a microphone to the antenna circuit between the ammeter A and the aerial condenser C, speech may be transmitted.

Wireless Telegraphy.—Only a few years ago wireless telegraphy was virtually unknown, with its scope as to distance comparatively limited. To-day world wide telegraphy is a fact accomplished. For instance, the Radio Corporation of America has stations in Massachusetts, New Jersey, Long Island and California which are in regular radio communication with England, France, Germany, Norway, Japan, and Hawaii, and thousands of commercial messages are exchanged daily between these stations which service will shortly be extended to South America.

Trans-Atlantic wireless telegraphy as carried on by the Radio Corporation of America is worked duplex, as it is termed. In overland duplex telegraphy the two operators at each end of the duplex circuit sit at the same table so that the receiving operator may readily "break" or stop the sending operator at the distant station when signals fail to arrive. In trans-Atlantic radio operation, for a similar purpose the sending and the receiving operators also sit at a common table in the New York office, the actual reception and transmission of messages in the telegraph code being effected in that city. But to diminish interference the transmitting station of the radio circuit proper is located at Port Jefferson, Long Island, while the receiving radio station is situated 18 miles distant at Riverhead, Long Island. The sending operator in New York transmits an outgoing message over a telegraph line to Port Jefferson where it is automatically repeated into the radio circuit.

France, Germany and Norway "are disentangled from the congested ether, amplified, converted into current of telephonic frequency and automatically relayed telegraphically over two telephone wires to the Broad Street office in New York, where the receiving operator takes the messages by sound, or automatic ink recording machines mark the dots and dashes on tape."

The latest form of aerial employed at Riverhead is termed a wave antenna. It consists of two copper wires on a pole line running from the receiving station along a country road and ending at a stream, nine miles remote. This form of antennae, suitably arranged, gives a marked improvement in reducing interference and statics. It also is strongly aperiodic, and effective as an energy collector. These features have made possible the simultaneous reception of a large number of messages by one antenna, and the automatic relaying of the messages over land wires. In its elementary form this wave antenna consists of a straight horizontal conductor, of the order of a wave length long, placed parallel to the direction of the desired signal with the receiving circuit located at the end furthest from the sending station and with the end nearest the sending station grounded through a resistance of the proper value to practically prevent reflection. Under these conditions, among other advantages, the desired signal waves produce comparatively feeble currents at the end nearest the sending station and strong currents at the receiver end. (See A. I. E. E. Paper, entitled "The Wave Antenna," by Beverage, Rice and Kellogg, 16 Feb. 1923.) The tone signal sent over the telephone line from the receiving set at Riverhead gives the best results in practice at about 1,500 cycles. The rate of transmission at high speed is from 40 to 50 words per

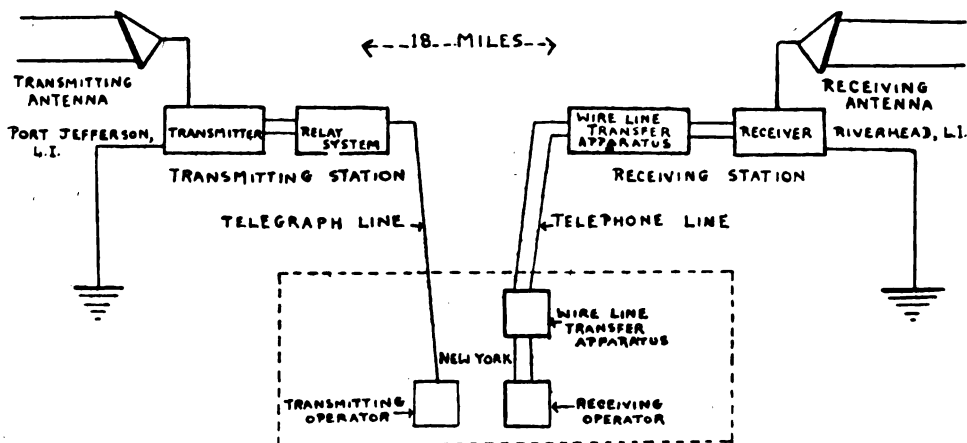


FIG. 7.—Transatlantic Radio Telegraphy. Centralized Operation.

The receiving operator in New York receives the signals from the receiving apparatus at Riverhead by means of a telephone line, as outlined in the accompanying sketch, Fig. 7. The transmitting and receiving apparatus is all handled by engineers at the respective radio stations in Long Island.

The telegraph messages picked up by the antennae at Riverhead from Great Britain,

minute by hand. A speed of 100 words per minute or automatic transmission is attainable under favorable conditions. For further details on this point, see *Wireless Age*, May 1922, p. 54, also TELEGRAPHY in 'The Americana.'

It may be noted that in overland telegraphy, duplex operation, that is, two way operation, or the sending of two messages simultaneously, one in each direction on one wire, is obtained by

devices which prevent the operation of the home transmitting key from affecting the receiving relay at the home station. (See 'The Americana,' TELEGRAPHY.) In radio telegraphy, Goldsmith and Weinberger have devised a method of duplex radio, following generally in principle, the overland duplex telegraph, by which duplex it is expected that the radio transmitting and receiving apparatus may be operated at one station. (See *Wireless Age*, May 1922, p. 68.)

Trans-Atlantic and other long distance wireless telegraphy has been made commercially possible very largely by means of the Alexanderson generator. (See 'The Americana,' TELEGRAPHY, WIRELESS.) This generator it is understood is being supplanted for this work by vacuum tube transmitters. (See Fig. 6 and text.)

Ship to Shore Radio.—Messages from ship to shore are sent to a coastal station of the Radio Corporation or otherwise, whence they are forwarded to their destination by land wires, and reversely, messages from shore to ship are sent by land wire to a coastal station from which the message is sent by radio to the desired ship. In practice the wireless operator on ship board tunes his apparatus for a pre-determined length, say, 600 meters. When he answers a call designed for his ship he may then arrange with the shore station to tune to a different wave length, if advisable, to avoid interference. This wave length is usually from 300 to 450 meters. Certain wave lengths above 1,800 meters are also assigned to this service.

Trans-Atlantic Radio Telephony.—In 1915 wireless telephone communication was effected one way between Arlington, Va., to the Eiffel Tower in Paris. During the same year a telephone message was transmitted from Arlington to the Hawaiian Islands where it was heard by the engineers of the American Telegraph and Telephone Company. More recently, 15 Jan. 1923, by means of improved apparatus, speech was transmitted from the Broadway office of the same company to the Southgate telephone station of the British postal system, London via wire from New York to the Rocky Point, Long Island station of the Radio Company, whence the voice was transmitted by radio to London. The voices of the speakers in New York were recognized by the listening engineers in London. This successful test was the culmination of months of preparation and co-operation between the engineers of the American Telegraph and Telephone Company and the Radio Corporation of America. It will be recalled that commercial trans-Atlantic telegraphy was accomplished only after years of experiment. No doubt trans-Atlantic radio telephony and even further distances will be equally successfully accomplished in due time.

It is worthy of note, as showing the widespread interest in long-distance radio that 11,000 amateurs participated in the recent trans-Atlantic radio tests of the American Radio Relay League. In these tests an amateur station operated by F. E. Newkirk, Los Angeles, Calif., was heard by amateurs in France, this being the first time the feat of crossing the American continent and the Atlantic Ocean by wireless was accomplished.

Broadcasting — Transmission, Reception.—Wide-spread as the use of radio was among amateurs in this country before the World War,

the recent advent of broadcasting by radio telephony evoked an immediate and unprecedented interest in the subject. Manufacturers were utterly unable to keep up with the demand that arose for radio apparatus wherewith to "listen in" to this latest marvel, and the demand is still maintained, almost unabated.

To-day "listening in" to the various forms of free entertainment and information now sent out by the multitudinous broadcasting radio stations in existence in this country is in some respects a fad on the part of many radio amateurs. But even so it is a source of pleasure and profit to millions of people. In the near future it may not only be a source of pleasure, but also a source of education, as colleges are a source of education. Indeed, already college and university authorities are giving careful thought to this possibility and the time may not be remote when college professors and instructors will send out by radio to countless thousands of students in city and country, the lessons that are being simultaneously delivered in the college and university classrooms. Broadcasting by radio will in the future no doubt be utilized also to bring the messages of the great men of the world, directly and personally, not only to the cities but also to the rural districts, to every little school-house in every part of this and other countries. Even at the present rate of development of wireless an authority on the subject states that the President of the United States will soon be able to address a large portion of the population of this country by means of the radio. Indeed, it will be recalled that on the occasion of the opening of the Radio Central Station on Long Island, 5 Nov. 1921, President Harding, by pressing a button in Washington, D. C., automatically started the transmission of a radio telegraph message of greeting which was simultaneously and instantaneously received in 28 different countries and continents, among them, New Zealand, Australia, Japan and South America.

Up to the present time radio broadcasting from private stations has been rendered gratis, the expense being met largely by the manufacturers of radio apparatus as a means of creating an interest that will lead to increased sales, and by large department stores as a species of advertisement.

All wireless transmitting stations are under control of the Federal government which licenses such stations. It is known that the simultaneous operation of two or more nearby transmitting wireless stations, each using the same wave length, will produce a mixing of signals in any stations attempting to receive them. This fact limits the number of transmitting wireless stations that can be operated in a given territory at one time, since the number of suitable wave lengths is also limited. (See TELEPHONY, WIRELESS, in 'The Americana.')

Indiscriminate broadcasting therefore only leads to confusion, to avoid which nearby broadcasting stations are required to use different wave lengths, one, say, 300 meters, another 360 meters. This, however, does not provide for simultaneous broadcasting by many stations. To increase the number some stations are assigned certain hours during which they will be allowed the use of the ether. To provide broadcasting entertainment or education, on a large scale without this confusion, it has been sug-

gested "that the Government should license five or six properly located, powerful stations capable of covering this continent. These stations should be assigned separate wave lengths, or bands of waves, to which they would have an exclusive monopoly so that interference with those stations would be impossible. These stations would extend over broad stretches of country and would supply over this territory information concerning all worth-while activities of interest to the public. For local purposes there should be established a net work of low-power stations with non-interfering wave bands and capable of relaying the large stations service for their immediate neighborhood. These should be able also to furnish for their locality matters of local interest. Such licensed stations, properly protected and organized, would doubtless become a matter of such great value that government aid would be invoked and doubtless granted for the proper upkeep and development of such a service."

Broadcasting; Transmission.—Broadcasting on the large scale now conducted for its successful operation obviously requires the employment of powerful apparatus and the making of many special arrangements. The general principle on which radio telephony is operated is analogous to that of wire telephony. In both cases a telephone transmitter is employed to set up electric undulations corresponding to the sound waves set up by the voice or by musical instruments; and telephone receiving apparatus is availed of to reproduce the articulate speech or music. In one case a wire is employed as the medium of communication, in the other the ether of space is utilized. In the first case the electric waves are confined to or guided by the wire, in the second case the electric waves are thrown, as the term implies, broadcast upon the ether. Apropos of this fact it is frequently suggested by laymen that radio telephony will in time supplant wire telephone communication in cities, thus displacing telephone exchanges, etc. Briefly, this suggestion is not feasible, if for only one reason, namely, the difficulty of preventing interference between the multiplicity of waves of virtually similar lengths that would be set up in the ether in an attempt to displace wire telephony by wireless methods. On the other hand, in wire telephony every wire between a central exchange and the various subscribers' homes and offices acts practically as do speaking tubes within buildings, that is, each particular telephone message is confined to the given wire. Hence, no tuning is necessary and the number of adjoining or parallel telephone wires that may be used in wire telephony is practically unlimited. On the other hand, for the general broadcasting of information of any kind, wireless communication is unrivalled.

In radio telephone broadcasting a series of radio waves of a given frequency or length, say 400 meters, is established by the oscillating circuit at the transmitting station, which waves are thrown upon the ether. These waves duly arrive at the receiving aerial wire, but by reason of their high frequency are not heard in the telephone receiver. The amplitude of the high frequency waves, however, can be varied or modulated, as it is termed, at the transmitting station, by impressing upon the high frequency waves, the variations of current set up by a telephone trans-

mitter in transmitting articulate speech or music. These variations obviously occur at an audible rate and the speech and music so transmitted are reproduced by the telephone receiver at the receiving station. (Electric waves of a frequency above audibility are termed radio frequency waves; those within audibility, audio frequency waves.) In this case the electric waves caused by the voice or musical instruments are said to be superimposed on the radio frequency waves. In other words, the radio frequency wave, so to speak, carries the superimposed wave of audio frequency and hence the wave of radio frequency is called the carrier wave. (See TELEPHONY, WIRELESS, in 'The Americana'.)

Broadcasting Transmitters.—It may be noted that the diaphragm of the ordinary telephone transmitter (microphone) possesses certain natural periods of vibration which will act resonantly with sound vibrations of corresponding pitch from an external source, thereby increasing the impressed vibrations, thus causing undesirable variations in the received note or tone. Ordinarily, the vibrations due to speech do not coincide with the natural periods of the diaphragm and thus speech transmission is not affected. But owing to the wider range of vibrations accompanying the transmission of music the action of the natural periods is found to be detrimental. To meet this defect and to provide generally for a more efficient transmitter for loud speaking purposes several special transmitters have been designed. One of these consists of a thin steel membrane or plate stretched to the elastic limit. On opposite sides of the steel membrane are symmetrically placed variable resistance granular buttons, operated in push and pull fashion. At the back of this steel plate or diaphragm, a flat plate is suitably fixed. These plates are set about .001 inch apart. Around the edge of these plates several small openings lead to the outer air. This device gives a quickly damped high frequency diaphragm which together with the well balanced granular buttons give high efficiency in practice. In the ordinary carbon transmitter the air waves set up by the voice fall upon the diaphragm and by the variations of pressure due thereto upon the carbon granules of that transmitter cause variations in their electrical resistance, which in turn cause variations in the current of the local circuit of the transmitter, thereby eventually reproducing at the telephone receiver the articulate speech originally set up at the transmitter. In the granular button transmitter the voice or music similarly causes vibrations of the diaphragm which in turn vary the resistance of the granular buttons. Hence, currents are set up in the local transmitter circuit corresponding in period to the said vibrations of the diaphragm and ultimately produce the transmitted speech or music at the receiving station. This granular button transmitter responds very readily to a speaker's voice or to music, but the electrical energy produced is small, since the vibrations of the diaphragm are very minute. It therefore becomes necessary to amplify very largely the output of this transmitter in order to obtain a sufficient amount of modulating energy in the oscillation circuit at the aerial. This in brief is accomplished by means of the transmitter placed in the primary of a special transformer, a special amplifying tube,

a modulation amplifying tube, and a power amplifying tube connected with the oscillation circuit, which impresses the amplified speech and music vibrations upon the aerial, from which they are broadcasted.

Broadcasting Stations.—A brief description of one of the best-known broadcasting stations, that known as WJZ in Newark, N. J., will suffice as an example of broadcasting stations in general, although each station differs to a greater or less degree from the others. The aerial of this station is located in the top of a building (The Westinghouse Electric and Manufacturing Plant) on masts 120 feet high and about 150 feet long. The aerial has six wires between the masts, forming "flat top" aerial. Suitable wires lead to a "counterpoise" on the top of the building, below the flat top, and to the transmitting room. The counterpoise is not grounded. The natural wave length of the aerial and counterpoise is about 450 meters, which is reduced to the broadcasting wave length of 360 meters by condensers in series with the aerial leads. All the details for successful and non-distorted transmission of the voice and music in broadcasting have been thoroughly planned and carried out in this station and nightly musical programs, run from seven o'clock to 10:15 o'clock. The ten o'clock signals from Arlington observatory are also transmitted. It may be noted that in radio transmission there is no time lag as there is in wire transmission due to the static capacity of the wire. Consequently all wireless stations within range of broadcasting stations may rely on the accuracy of the time signals thus transmitted from the Naval Observatory, Arlington. In the WJZ station the complete radio transmitter is enclosed in metal screening and glass, and a blower is provided to maintain the tube at the best operating value. A switchboard is mounted on the right of the transmitter so that the set may be connected to the station microphone for announcements, etc., to the shielded pick-up device used for phonographic reproductions, or to the studio on the first floor of the building. The studio is specially designed for concert work. A grand piano and other instruments form part of the equipment. (See illustration, Fig. 8.) The walls and ceilings, as in all such studios, are hung with heavy curtains to deaden echoes and eliminate outside sounds. Different types of microphones are used for various kinds of entertainment, such as solos, quartets, and lectures. An interlocking system of light signals and switches connects this room with the transmission station on the roof. One or more small "pick-up" instruments termed microphones, mounted on standards, are usually the only pieces of electrical apparatus to be found in this room. Wires from these convey the voice or music into another room, which in many cases is at quite a distance from the studio. The latter resembles a laboratory with its various pieces of electrical apparatus, transmitting vacuum tubes, panel boards (for switching), storage batteries, etc. Here the music or speech is put through a number of steps of amplification by means of vacuum tubes which increases the volume of the sound waves thousands of times. The amplified speech currents then enter another bank

of vacuum tubes, termed modulators of the electric waves sent through the ether. Vacuum tubes, generally similar to those employed in ordinary receiving, but much larger and stronger and therefore capable of transmitting more elec-



"Westinghouse" Photo.

FIG. 8.—Program announcer speaking into a special transmitter.

tric power are utilized in broadcasting. The electric power employed in some of the larger broadcasting stations amounts to 500 watts of radiated energy, that is, the electrical power delivered to the aerial.

Wired Wireless Broadcasting.—This method of broadcasting, which is not strictly wireless, is due to General Squier. The method consists of attaching a wireless receiver to an electric light circuit by the insertion of a plug in the usual lamp socket. The telephone is separated from the electric light circuit by a condenser securely placed in the plug. The electric light current acts as a carrier for the electromagnetic currents picked up by the electric light wire. For general broadcasting by this method it is proposed that the entertainment or news be supplied by the electric light company from its own headquarters. Such form of broadcasting would not interfere with or add to the congestion of the ether due to the regular radio broadcasting stations.

Loud Speaking Apparatus and Circuits.—A very important recent addition to broadcasting consists in means whereby the voices, music,

etc., of lecturers or performers can be conveyed by wire to a distance and then delivered to audiences in auditoriums or broadcasted. The "loud speaker" referred to in the following description, prepared by the makers of the apparatus, may also be employed to magnify directly a speaker's voice in a hall or in the open air. Again, the outfit may be utilized in two more or less widely separated auditoriums in such a manner that a joint discussion may take place between the audiences in the respective auditoriums as if the participants in the discussion were in the same room. An instance of this kind occurred, 14 Feb. 1923, between two sections of the American Institute of Electrical Engineers, one section in Chicago, the other in New York. While this joint discussion was in progress it was also broadcasted from a radio station. This equipment is generally known as the Bell loud speaker. It consists of a sensitive microphone for picking up the voice of the speaker; a voice-current amplifier for increasing the magnitude of the voice currents; loud speaking receivers with projectors for reproducing the sounds; and current supply apparatus and suitable circuits and control devices. The microphone, or distance talking transmitter, is mounted in a suitable housing about six inches in diameter, with special supports to insure freedom from mechanical vibrations which might impair the quality of the sounds to be transmitted. No collecting horn or mouthpiece is required for the microphone, which is sensitive to the voice of a speaker three to eight feet away, even though he may not be standing at all times in a position directly in front of the microphone. The purpose of the microphone is to convert the sound energy of the speaker's voice into electrical energy. The energy thus produced is very small, considerably less than that produced in the transmitter of the ordinary commercial line into which one talks directly. Hence it is obvious that the electrical energy must be greatly amplified in order to give the desired volume of sound in the loud-speaking receiver. For this purpose a multi-stage vacuum tube amplifier is employed. First, there is a single stage called the transmitter amplifier, from which the circuit passes to the power amplifier. At this point a connection is made to the long distance lines if the speech is to be sent to distant audiences. The second stage of amplification, the first of the power amplifier, is relatively simple, but in the third stage, a push-pull arrangement of tubes is used, and in the fourth stage there is a double push-pull set of high power tubes. Briefly, the push-pull is an arrangement of the tubes, with special transformers, whereby in one stage of amplification one tube is inoperative while the other is assisting. In the long distance circuits in addition to the terminal amplifiers, smaller amplifiers or telephone repeaters are used at intervals of 200 or 300 miles to make up the line losses. (See 'Americana,' TELEPHONY). The transmitter amplifier consists of a single five-watt vacuum tube arranged in a circuit which receives the output of the double-button granular microphone transmitter and delivers the amplified current to the long distance telephone line, or, should the speaker be talking directly to the assemblage, into the main or the

first power amplifier. The preliminary stage of the power or main amplifier, which may be cut in or out by means of switches, uses a five-watt tube. In the intermediate stage, two power tubes are connected in parallel and the current through both filaments is controlled by a single rheostat, the same as for a single tube. In the final, or power, stage four 50-watt tubes are utilized in a parallel push-pull arrangement. The four filaments of the tubes are connected in parallel in two pairs, the current for each pair being controlled by separate switches. These power tubes are worked at high potential, 220 volts on the preliminary and 750 volts on the power stages. The transmitter amplifier is usually operated from storage and dry batteries. The sound projectors are generally the part of the loud-speaking apparatus most in evidence. Wooden projectors, rectangular or pyramid shaped and usually about ten feet long, serve to direct and distribute the sound emitted from the receiver diaphragm. The receiver element contains a powerful magnet. The vibrating steel armature is suspended near the center on a slightly flexible reed, while one end is coupled to a linen diaphragm through a small rod. At each end of the armature a pair of magnetic pole-pieces work, push-pull fashion, upon opposite sides. The coils through which the speech current flows have the armature for a simple core and are almost surrounded by the pole pieces. The diaphragm is of very special construction, impregnated with a plastic material which gives the proper degree of resiliency and with circular corrugations to further the acoustic qualities. The coil and magnet system is contained in a small and compact metal housing which also provides attachment for the horn which directs and distributes the sound. The loudness of the sound emitted by individual projectors is controlled by means of a special transformer with a separate dial switch for each group of projectors. The most natural and pleasing results are obtained with the projectors grouped in a cluster rather than distributed about the area to be covered.

Hook-Ups.—The great influx of amateurs into the radio ranks, following the coming of broadcasting, naturally led to a great demand for information as to the best methods of arranging apparatus and circuits for all around results and this information was presently forthcoming from every side. It may quite truthfully be said that the possible arrangements of aërials or loops, and of the local receiving circuits or "hook-ups," as they are generally termed by amateurs, are legion. To-day almost every more or less expert amateur has several hook-ups of his own design, the use of which he is ever ready to urge upon his neighbor. It must be said in all fairness that the technical aptness and ability shown by thousands of men and women in all walks of life who have taken up with radio, in the construction and operation of their radio outfits, is nothing short of marvelous. The present writer with an experience of many years in the practical operation of large and small electrical systems can recall nothing in any way comparable to it. To cite only one instance. A young man engaged as a traveling salesman for a business not in the remotest de-

gree connected with the electrical arts, and without any previous electrical or mechanical experience, undertook the construction of a wireless receiving set described and illustrated in a book for amateurs. The set is designed for two stage audio amplification with tickler method of regeneration and the necessary parts are

formation concerning sliding contact coils, or tuners, variometers, condensers, etc., pp. 235, 269, 283.) The object of the sliding contacts, of course is to vary the inductance of the coils for tuning purposes. Fig. 10 shows a two contact tuning coil which is more efficient than the single contact slider coil. This coil is illustrated

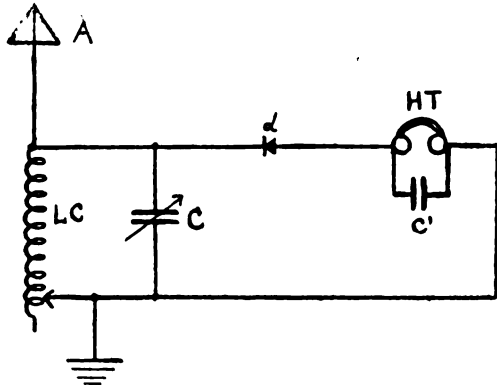


FIG. 9.—Single Slide Tuning Coil.

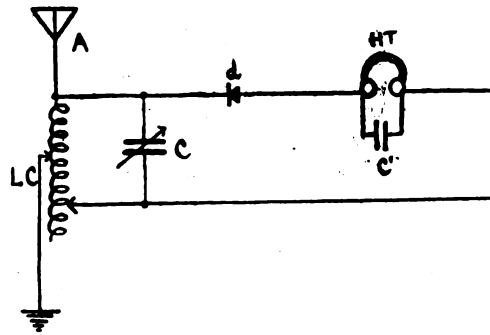


FIG. 10.—Double Slide Tuning Coil.

given in detail. The amateur, really a novice, procured these parts in the rough, laid out the places for holes in the panels and had the holes bored, soldered every joint, fixed and set up the transformers, vacuum tubes, condensers, etc., and in a short time had a wireless outfit with which he is able to receive the output of a number of broadcasting stations, near and remote, with a facility not surpassed by the owners of regularly manufactured complete radio outfits of equal power.

Amateur Hook-Ups for Receiver Circuits.—As just stated the possible hook ups for radio receiving circuits are without number. Naturally some of these hook ups are better than others, and for the information of beginners, several well tried out circuit connections will be given, somewhat in the order of their simplicity. In Fig. 9, A is the aerial or loop. d is a crystal detector. LC is a tuning coil with single sliding contact. HT is the head telephone receiver. C is a variable condenser, one in

in Fig. 11. It is about nine inches long and will respond to a wave length of 1,000 meters. In Fig. 12, LC is a loose or vario coupler tuning coil, with sliding contacts. By tight and loose coupling is meant respectively the more or less direct connection or inductive relation of one electrical circuit to another; in this case the aerial circuit to the receiving oscillation circuit. This two-coil or vario coupler arrangement is really a variable transformer and obeys the laws governing transformers. The coils are usually arranged so that the primary and secondary coils can be readily put in greater or less proximity. This vario coupler is much more efficient in tuning and in cutting out interference than the single contact coil. The other letters of reference in Fig. 11 represent apparatus similarly lettered in other figures. No local batteries are shown in Figs. 8, 9, 11 as the rectified or uni-directional current that operates the telephone receiver is supplied by

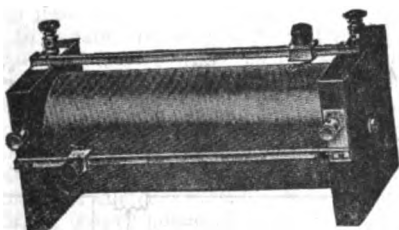


FIG. 11.—Double Slide Tuning Coil.

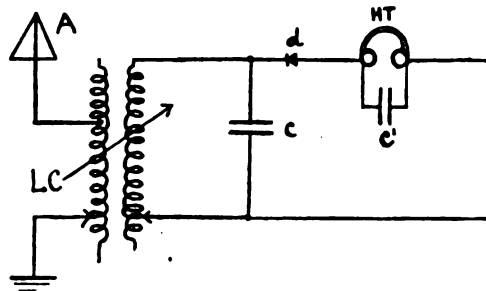


FIG. 12.—Loose Coupling with Crystal Detector.

which the capacity can be altered by variations in the number or position of its plate. C' is a fixed condenser, that is, one in which the capacity is not variable. The term 'fixed condenser' was perhaps first applied in this sense by the present writer. (See 'MAVER'S WIRELESS TELEGRAPHY AND TELEPHONY' for detailed in-

formation concerning sliding contact coils, or tuners, variometers, condensers, etc., pp. 235, 269, 283.) The object of the sliding contacts, of course is to vary the inductance of the coils for tuning purposes. Fig. 10 shows a two contact tuning coil which is more efficient than the single contact slider coil. This coil is illustrated

arranged, however, and may consist of two honeycomb coils, one fixed, the other movable on suitable supports—duo laterally, so that any desired inductance within the scope of the instrument may be obtained by varying the distance of one coil from the other. The terms "honeycomb" and "spider web" coils are shop words arising from the appearance of the winding of the wire of the coil, which is designed

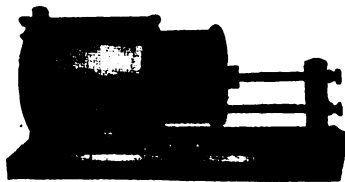


FIG. 13.—Loose Coupler.

for compactness and to provide high efficiency with respect to distributed capacity and inductance per unit of resistance of the coils. An illustration of such honeycomb coils suitable for mounting for the foregoing purpose is given in Fig. 14. Three spider web coils are shown mounted in Fig. 15. In the latter the coils are

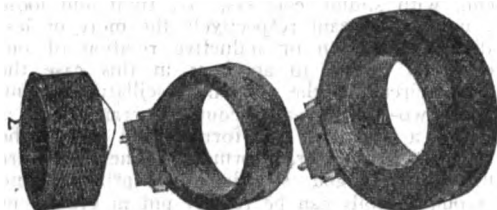


FIG. 14.—Honey Comb Coils.

placed on three doors. The middle door is fixed, the outer door is movable. The circuit is tuned by moving the doors which remain where placed. In this way a close adjustment is obtainable. The tuning range of this instrument is 180 to 450 meters when used with two variable condensers of .0005 mf capacity.

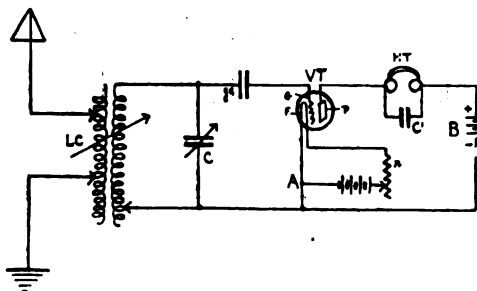


FIG. 16.—Loose or Vario Coupler with Three Electrode Detector.

Fig. 16 is a loose or variable coupler hook up. It is similar to Fig. 13 except that it utilizes the audio vt, the heating battery A and potential battery B, a potentiometer regulates the temperature of the filament F by varying the resistance r . G is the grid, P is the plate, gc is the grid condenser of tube VT.

Fig. 17 represents a vario coupler and variometer regenerative receiving circuit. This is a hook up for short wave lengths ranging from 150 to 700 meters. gc is the grid condenser and leak cl. v v' are variometers, to be described. For best results in practice the variometers are placed about eighteen inches apart in the usual wireless receiver cabinet, with the coupler between them as indicated in a subsequent illustration, Fig. 22. This circuit is perhaps the one most generally used for short wave regeneration and is very popular with amateurs. Both variometers give regeneration thereby augmenting the received signals. With well selected variometers a wave length of 150 to 400 meters is found to give satisfactory results.

Variometer.—The value of this instrument in wireless practice warrants giving it further description. The variometer makes possible a continuous and accurate variation of the frequency of the receiving circuits in which they may be used, in contradistinction to the step-by-step, or sliding contact tuning coils, which latter have disadvantages where accurate tuning is required, due to the introduction of resistance and noises at the sliding contacts. In its operation the variometer (illustrated in Fig. 18 detached from the receiving cabinet) employs the

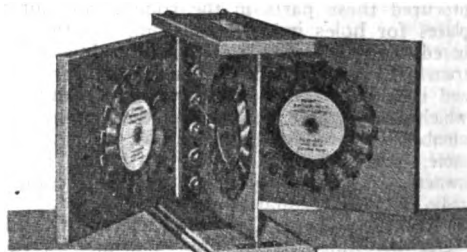


FIG. 15.—Spider Web Coils.

principle of the Ayrtton and Perry standard of induction. It usually consists of two coils, one (the stator) fixed, the other (the rotor) movable. The coils are connected in series. When at right angles to one another the coils give their minimum inductance, the maximum when they lie in the same plane. When turned to

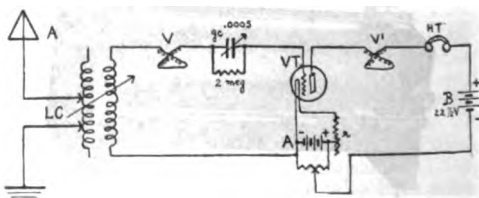


FIG. 17.—Vario Coupler, Variometer Regenerative Receiving Set.

the point of minimum inductance or zero point the coils may be automatically short circuited to prevent loss due to resistance of the coils. The scale shown indicates the wave length in given positions of the coil. Sometimes several variometers or other forms of inductance coils are connected in series in a circuit to obtain greater

or a more variable inductance. (See Fig. 14.) In Fig. 17, variometer v is connected with the grid of vt and is termed the grid variometer. Variometer v' is connected to the plate of vt and is called the plate variometer. When variometer v is adjusted by gradually varying its movable coil relatively to its stationary coil it is very effective in tuning since its operation by thus varying the induction of the circuit in-

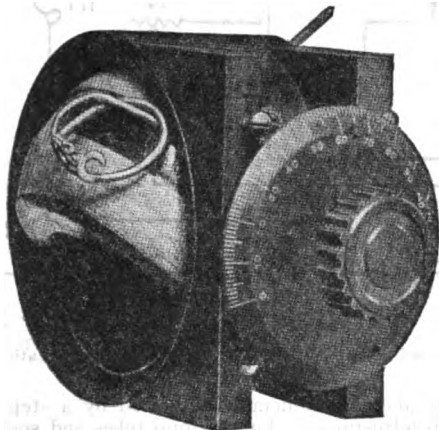


FIG. 18.—The Variometer.

creases or decreases the wave length and consequently the frequency of the circuit, the wave length decreasing as the frequency increases and vice versa. It is this general arrangement of the circuits and apparatus in Fig. 17 that permits regenerative action by the variometers, inasmuch as the Armstrong principle of regeneration is availed of, namely, an arrangement of circuits through which some of the energy from the output or plate circuit will be returned to the input or grid circuit. This may be done with inductive, capacitive or resistance coupling between the grid and the plate circuit. The plate variometer in this figure may be termed the primary, the grid variometer the secondary of the circuit. In tuning in a signal by this arrangement the plate variometer is first varied and then the grid variometer is adjusted for best results, both adjustments being made as nearly simultaneously as possible. Then the plate circuit is adjusted to obtain the best regenerative effects. This point is reached when, as the adjustment proceeds, the signal becomes louder and louder, until if the adjustment is still further pushed, oscillation of the set takes place and signals are lost. Adjustment for regeneration therefore is stopped just before oscillation begins. In practice the increase of current derived by thus tuning the plate circuit is very noticeable.

So sensitive are many wireless regenerative receiving sets that even the approach of the operator's hand, arm, or body will vary the capacity of a set and upset the tuning. To avoid this effect many outfits are supplied with sheets of copper suitably placed, for instance, at the back of the supporting panel and between the variometer and coupler.

Audio and Radio Amplification.—It is known that the strength of current in the telephone receiver used with the audion detector tube may be further amplified by the addition of a transformer and an amplifying tube to the circuit. A hook-up for this purpose is shown in Fig. 19, in which LC is a loose coupling. VV' are variometers. vt is a detector tube. t is a small transformer. vt' is an amplifying tube. Transformer t and tube vt' together constitute one step or stage of audio amplification. By adding more stages to the circuit still greater amplification may be obtained, but in practice the number of such stages is usually limited to two by the fact that extraneous noises, statics, etc., are also amplified to a harmful degree. The foregoing arrangement is termed audio amplification since it is the waves of audio frequency that are amplified. Increasing the audibility may not increase the distance at which signals can be picked up. This, however, may be accomplished by amplifying the incoming waves at the aerial or before the waves reach the detector. For instance, as in Fig. 20. If the incoming signals from a distant station are too weak to charge the grid condenser gc , Fig. 19, the vacuum detector tube will not respond. If, however, the grid condenser is removed, as in Fig. 20, and an amplifying tube vt is placed in the circuit next to the aerial or loop, the signals will be amplified by vt . These amplified signals are further increased in strength by passing them through a transformer of suitable construction, t . If these signals are not sufficiently strengthened by vt and t to operate the grid condenser gc in Fig. 20 another tube and transformer may be placed in the circuit with the secondary coil of t . This would constitute a two stage radio frequency amplification and

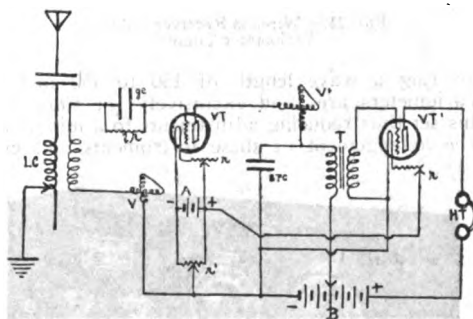


FIG. 19 — One Stage Audio Frequency Amplification with Vario Coupler Variometer Regenerative Receiving Set.

more stages could be added as desired. In radio frequency amplification the audibility of the signals in the head telephones HT is not increased, hence this arrangement does not increase the static or other extraneous noises in the telephone receiver but it increases the distance from which signals may be received. A loud speaker can take the place of HT in Figs. 19, 20, if required.

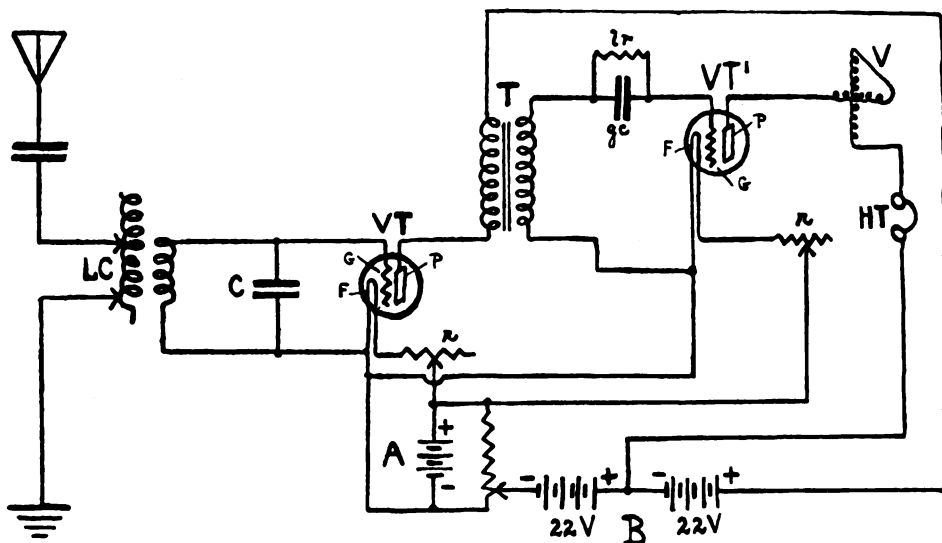


FIG. 20 — Standard Vario Coupler, Variometer Regenerative Hook Up with One Step Radio Frequency Amplification.

Fig. 21 illustrates the general external appearance of many of the popular makes of wireless receiving cabinets. This particular outfit is arranged as a short wave regenerative receiver,

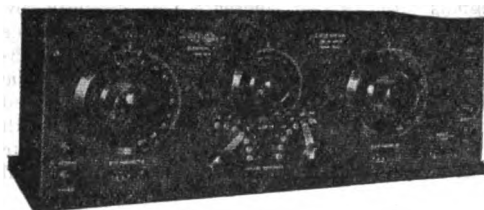


FIG. 21.— Wireless Receiver Cabinet, Variometer Tuning.

covering a wave length of 150 to 450 meters. Variometers are used exclusively for tuning in this set thus reducing adjustments to a minimum. The arrangement of these instruments and cir-



FIG. 22.— Three Stage R. F. and Detector Receiver Set.

cuits is indicated on the front of the cabinet. The knob in control of the grid variometer is seen at the left, that in control of the plate variometer at the right. The knob controlling the adjustment of the coupler is in the center.

The antennæ inductance is varied by a step-by-step adjustment. The vacuum tubes and sockets are contained within the cabinets. Contact posts are provided on the framework for the necessary connections for antennæ, ground, batteries, etc.

The receiving outfit shown in Fig. 22 is designed for radio frequency amplification and is equipped with a three-stage radio frequency amplifier and detector unit. This receiver has a continuous range of from 175 to 600 meters. Tuning is obtained by a single unit, a variable condenser connected right across the input terminals of the set. This is not a regenerative set in the usual sense. The interior details of the foregoing receiver are outlined in Fig. 23. The bayonet sockets for the detector tube and the three tubes for the three stage amplification are seen in the figure. The wiring shown is known as the bus bar wiring and follows the well known bus bar arrangements employed in light and power stations where clearly exposed



FIG. 23.— Inside Wiring of Figure 22.

circuits are desirable. One type of the small air core transformers used in wireless receiving sets is illustrated in Fig. 24.

For radio frequency amplification, as against regenerative amplification, it is claimed, because

of the sensitivity of the apparatus, that it is well adapted to use with small coil or loop aeralis giving as it does strong signals when so employed.

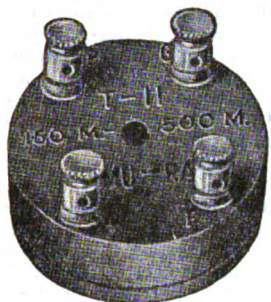


FIG. 24.—Air Core Radio Transformer.

The Loop.—This arrangement is now much employed with sensitive receivers as it dispenses with need of an outside aerial. The loop, Fig. 25, consists of a continuous wire, wound serially in nine turns, more or less, over a diamond shaped or square wooden frame about three feet

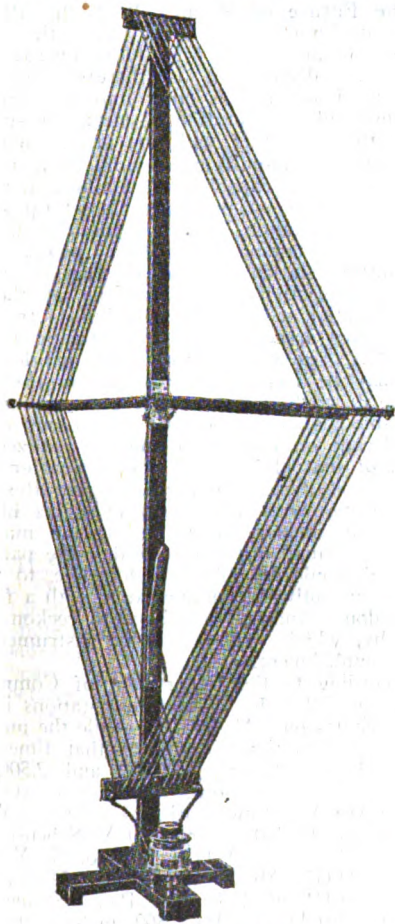


FIG. 25.—Loop Aerial.

six inches square. This loop may be collapsable for portability. The frame work of the loop may be pivoted so that it may be rotated as desired. This is to take advantage of the directive action of the loop. In certain positions of this loop aerial signals of maximum strength are received due to the fact that the wires of the loop are in their most effective position to be cut by the incoming electro-magnetic waves. Conversely, in other positions of the loop no waves will be cut and no signals received. (For information on directive action of electro-magnetic waves on aerial wires see 'Encyclopedia Americana'—TELEGRAPHY WIRELESS.) The use of a loop reduces interference from undesired waves and gives virtual freedom from statics.

Rotary Variable Condenser.—One type of variable condenser in which one set of plates is stationary, the other rotary, is illustrated in Fig. 26. For best results in wireless receiving, condensers of high excellence are imperative. This is true in all branches of the electrical art where condensers are necessary, but is especially true in the radio art. In many cases where receiving sets do not give the results expected it is probable that the cause might be traced to defective condensers. According to the manufacturer's description, condensers of the type illustrated in the figure, made up with 43 plates, have a capacity of .0008 microfarad. Another condenser having 17 plates has a capacity of .0003 microfarad. The position of the rotary plates in relation to the fixed plates

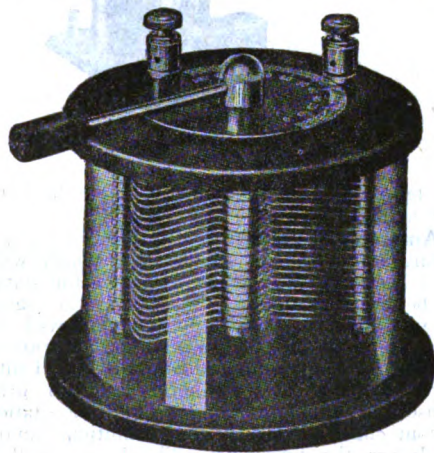


FIG. 26.—Rotary Variable Condenser.

is varied by means of the handle shown and readings are indicated on a dial on top of case containing the plates which are visible through a glass cylinder.

Loud Speaker.—This apparatus is used when sounds louder than those directly reproduced by the head telephone receiver are desired. The loud speaker in a simple form consists of a sensitive telephone receiver with a socket or other suitable device near the diaphragm of the receiver in which a horn is placed. By this device when the incoming signals have been suitably amplified the voice

and music may be heard throughout a fair sized room. The employment of a two stage amplifier with at least 60 volts on the plate of the second tube is recommended. There are many loud speaking devices on the market. One such as that illustrated in Fig. 27 gives satisfactory results and by the addition of a special power amplifier, not shown, reproduces the voice, music



FIG. 27.—Loud Speaker.

and telegraph signals so loudly as to be heard over a broad area.

Amateur Transmitting Stations.—A transmitting station cannot be operated legally without a license if the signals set up by the station can be heard in another State or if the signals are of sufficient strength to interfere with the reception by a neighboring licensed station of signals from an outside State. The United States Department of Commerce will grant licenses to amateurs for transmitting stations without charge, under certain conditions, among which are the following. The license will be granted only to a citizen of the United States who will be held responsible for the conduct of the station. All stations are required to use only the minimum power necessary to carry on successful communication. Willful interference on the part of any radio station or the transmission of false or fraudulent distress signals or calls is punishable by severe penalties.

Special Amateur Stations.—These stations, known as "L" class stations, are usually permitted to transmit on wave lengths not to exceed approximately 375 meters. Licensed stations, classed as "General Amateur Stations," which are within five miles of a government radio station are permitted to use a power

input of 1 kilowatt and are not permitted to transmit on wave length in excess of 200 meters. More specific information relative to all classes of radio licenses can be obtained from the radio inspector in the various districts. First District, Boston, Mass., Second District, New York, N. Y., Third District, Baltimore, Md., Fourth District, Norfolk, Va., Fifth District, New Orleans, La., Sixth District, San Francisco, Cal., Seventh District, Seattle, Wash., Eighth District, Detroit, Mich., Ninth District, Chicago, Ill. Licenses are not required for the operation of radio receiving stations.

American Radio Relay League.—This league (amateurs) has for its principle object the relaying of messages to all points of the country without charge. The members of this league include the majority of the most expert amateurs of the "National Amateur Association" who have shown a remarkable aptitude for radio operation and have many excellently equipped radio stations. By means of these stations, carefully selected as to routes, messages are relayed across the continent in a comparatively short time. This league also conducts many tests in connection with trans-Atlantic and other long distance radio transmission.

The Future of Radio.—With the all pervasive medium employed by radio, the ether distance is annihilated. In radio operation to cover any distance it is therefore only a question of setting this ether into a given rate and amplitude of vibration by means of suitable transmitters, together with the proper selective apparatus and amplifying devices at a remote receiving station, capable of detecting and reproducing the voice or other signals set up at the transmitting station. Even with the present methods of obtaining the necessary power at the transmitting station and the existing means of obtaining selectivity and sensitivity at the receiving station it is already possible to transmit and receive speech across the Atlantic Ocean. With the greater advances in the wireless art that may be confidently expected in the near future, it would be unwise to place a curb on one's imagination as to what may occur in the next decade or less. Even may be realized the dream of that philosopher who, a quarter of a century and more ago, predicted that the time would come when a man sitting in his library in far off Sydney, Australia, by the manipulation of a small instrument held in the palm of his hand would be able. Aladdin-like, to place himself instantly in communication with a friend in London. And we still have to reckon with telepathy, which will require no instrument in its accomplishment.

According to the Department of Commerce there were 581 radio broadcasting stations in the United States on 6 March 1923 while the number of receiving stations in use at that time was estimated at between 1,500,000 and 2,500,000. Some of the best known broadcasting stations include WEAf, New York, 400 meters; WJZ, Newark, N. J., 360 meters; WGY, Schenectady, N. Y., 370 meters; WGR, Buffalo, N. Y., 360 meters; WGI, Medford Hillside, Mass., 360 meters; WIP, Philadelphia, Pa., 400 meters; KDKA, Pittsburgh, Pa., 360 meters; KYW, Chicago, Ill., 400 meters; WHW, Tarrytown,

N. Y., 360 meters; WOR, Newark, N. J., 400 meters; WSB, Atlanta, Ga., 400 meters; WRAP, Fort Worth, Texas, 400 meters; KHJ, Los Angeles, Calif., 400 meters; WKAQ, Porto Rico, 360 meters; WBZ, Springfield, Mass., 422 meters; WWJ, Detroit, Mich., 400 meters; WNAC, Boston, Mass., 360 meters; NAA, Arlington, Va., 710 meters; WLW, Cincinnati, Ohio, 360 meters; KSD, St. Louis, Mo., 400 meters.

Bibliography.—Buchner, 'Vacuum Tubes in Wireless Communication'; Fleming, 'Thermionic Valve and Its Development in Radio Telegraphy and Telephony'; Maver, 'Wireless Telegraphy and Telephony'; R. C. A. 'Radio Enters the Home'; Smith, 'Modern Radio Operation'; Taggart, 'Thermionic Tubes in Radio Telegraphy and Telephony'; Van Der Bijl, 'Thermionic Vacuum Tube'; Eltz, 'The Armstrong Super-Regenerative Circuit.'

WILLIAM MAVER, JR.,

Author, 'Wireless Telegraphy and Telephony.'

RADIUM. Owing to the discovery in the Belgian Congo of what are believed to be enormously rich deposits of radium ore, the price of radium, it was announced in November 1922, had dropped from \$120,000 to \$70,000 a gram. At the same time the statement was made by one of the three radium-producing companies of the United States that because of the richness of the Belgian Congo ores, the probabilities are that the extraction of radium from American ores will cease. Until the Belgian Congo deposits were discovered, the carnotite ores of Colorado were considered the richest radium yielding ores in the world. Early in 1922, it was announced that a relatively rich radium-bearing field had been discovered in the summer of 1921 on Valdez Island, British Columbia and preparations were begun for its working in 1922. It is estimated that the American production of radium to date is about 3½ ounces. Current stocks are estimated at about 3 ounces in America and 5 ounces in the entire world. In November 1922, there was effected at Brussels a consolidation of Belgian and American radium-producing interests. At the same time it was disclosed that the Société Générale de Belgique had erected, at a cost of 3,500,000 francs, a plant, which was already in operation at Oolong, Belgium, for refining radium ores brought from the Belgian Congo.

RAILROAD LABOR BOARD, United States. Organized 16 April 1920, under Title III, Transportation Act, 1920, to hear and decide any dispute involving grievances, rules, or working conditions, in respect to which any adjustment board (which might be formed by agreement between any carrier, group of carriers, or the carriers as a whole, and any employees or subordinate officials of carriers, or organization or group of organizations thereof), for any reason, fails to reach a decision; or, in the absence of such adjustment board, to assume jurisdiction over and decide disputes, (1) upon the application of the chief executive of any carrier or organization of employees or subordinate officials whose members are directly interested in the dispute, (2) upon a written petition signed by not less than 100 unorganized employees or

subordinate officials directly interested in the dispute, or (3) upon the Labor Board's own motion if it is of the opinion that the dispute is likely substantially to interrupt commerce.

In determining the justness and reasonableness of wages and salaries or working conditions the Board is required by law to take into consideration, so far as applicable, among other relevant circumstances:

(1) The scales of wages paid for similar kinds of work in other industries; (2) the relation between wages and the cost of living; (3) the hazards of the employment; (4) the training and skill required; (5) the degree of responsibility; (6) the character and regularity of the employment; and (7) inequalities of increases in wages or of treatment, the result of previous wage orders or adjustments.

The Board is composed of nine members, appointed by the President, by and with the advice and consent of the Senate: three representing the employees and subordinate officials of the carriers, appointed from nominations made by employees and organizations of employees; three representing the carriers, appointed from nominations made by the carriers; and three representing the public, appointed directly by the President. Of the original members of the Board one from each group was appointed for a term of three years, one for two years, and one for one year. Their successors are appointed for five years. The central offices of the Board are located in Chicago, Ill., but it may, whenever it deems it necessary, meet at such other place as it may determine.

Since its organization and up to 28 April 1923, the Board has published 1,801 decisions, ranging in importance from questions of minor grievances affecting individual employees to general revisions of rates of pay and rules covering all classes of employees and subordinate officials. Among the more important decisions rendered are:

Decision No. 2, effective 1 May, 1920, which awarded increases in existing rates to all classes of railroad employees and subordinate officials, increasing the annual pay-roll of the carriers by approximately \$565,000,000.00;

Decision No. 147, effective 1 July, 1921, which authorized decreases in existing rates of all classes of employees and subordinate officials, effecting an annual saving to the carriers of approximately \$378,000,000.00;

Decisions Nos. 119, 222, 501, 707, 721, 722, 725, 726, 757, 830, and 1,266, effective on various dates, which together constitute a complete revision of the rules and working conditions affecting all classes except employees in the train and engine services;

Decision No. 982, which was the first of a series of decisions involving the rights of the carriers to contract out work and thereby remove certain classes of employees from the jurisdiction of the Board;

Decisions Nos. 1,028, 1,036, and 1,074, effective 1 July, 1922, which authorized decreases in the rates of employees in the shop crafts and in the maintenance of way, clerical, and other departments, reducing the annual wage bill of the carriers by \$135,000,000.00; and

Decision No. 1,267, effective 16 Oct. 1922.

which awarded increases in existing rates of employees in the maintenance of way department, at an annual expense to the carriers of approximately \$23,000,000.00.

The members of the Board in December, 1922, were: Ben W. Hooper (chairman), G. W. W. Hanger (vice chairman), and R. M. Barton, representing the public; Horace Baker, J. H. Elliott, and Samuel Higgins, representing the carriers; and W. L. McMenimen, Albert Phillips, and A. O. Wharton, representing the employees and subordinate officials and the organizations thereof.

L. M. PARKER,
Secretary.

RAILWAYS. In 1922 the railway mileage of the world was 748,005 miles. Of this total, 380,194 miles was in North and South America, 237,888 miles was in Europe, 74,115 miles in Asia, 32,239 miles in Africa, and 23,569 miles in Australia. The railway mileage of the United States is 264,373 miles, or 35 per cent of the world total. At the beginning of 1923 the Bureau of Railway Economics indicated the property valuation of Class 1 carriers in the United States for rate-making as \$19,400,000,000, on which the approved reasonable return would be \$1,116,000,000 net annually. In 1922, this return was not realized. The carriers had to struggle with two strikes of national scope—the coal and shopmen's strikes—which combined to cut their operating profits over a period of months. Nevertheless, the railways of the United States weathered the storm to such an extent that for the year ended 31 Dec. 1922 the operating revenue of the companies, representing 256,235 miles, totaled \$5,658,462,621. After deducting operating expenses, taxes and rent of equipment and facilities, the net income was, \$731,250,138, which is \$418,749,862 short of the 5¼ per cent allowed by the Interstate Commerce Commission under the terms of the Transportation Act of 1920. The financial balance wavered little, with rate reductions amounting to about \$500,000,000 offsetting wage cuts of approximately \$485,000,000 for the year. The former figure represents the saving to the public effected by the July order of the Interstate Commerce Commission cutting \$300,000,000 from the existing structure plus another \$200,000,000 representing voluntary reductions by the individual carriers, while the wage saving comprises the \$134,988,919 reduction by the Labor Board's decision in the case of clerk's, stationary engine workers, signalmen, maintenance of shop and way men, and other cuts over a period of months.

Although railway sentiment leans to the belief that 1922 was constructive, all early hopes of executives that the year would set a record in earnings were lost when coal miners ceased work on 1 April not again to be resumed until 1 September, and when on 1 July the railway shop forces struck for an extended period. The protracted layoff of the coal miners made heavy inroads into the earnings of the systems whose chief source of revenue is derived from the handling of fuel, while practically every carrier was slow in its recovery from the effects of the shopmen's strike.

The total funded debt of the railways of the

United States was \$9,820,277,885, according to the latest compilation of the Bureau of Railway Economics. The entire amount, with the exception of about \$35,000,000, is outstanding in the hands of the public. The total is composed of the following classes of securities: Mortgage bonds, \$7,111,561,947; collateral trust bonds, \$934,489,826; income bonds, \$313,493,681; miscellaneous obligations, \$789,118,004; and equipment trusts, \$662,608,177. The following table shows the results of operation for the calendar years 1922, 1921, and 1920:

CLASS 1.—STEAM ROADS.

	(Millions of dollars)		
	1922	1921	1920
Freight revenue.....	4,007	3,928	4,324
Passenger revenue.....	1,076	1,154	1,287
Railway operating revenues.....	5,617	5,573	6,225
Maintenance expenses.....	1,995	2,021	2,624
Transportation expenses.....	2,175	2,288	2,902
All operating expenses.....	4,456	4,604	5,830
Taxes.....	305	280	281
Net railway operating income *.....	777	616	58
Ratio of operating expenses to operating revenues, per cent....	79.32	82.61	93.65

* Represents the result of deducting from railway operating revenues the following items: Railway operating expenses, railway tax accruals, uncollected railway revenue and net equipment and joint facility rents.

The railways in 1922 carried 340,000,000,000 ton miles of freight and 35,600,000,000 mile-passengers. The following table shows the total revenues and expenses by grand accounts of Class 1 railways of the United States for the years 1921 and 1922 as compiled by the Bureau of Railway Economics:

ACCOUNT	For the 12 months ended December 31st	
	1922	1921
Total operating revenues.....	\$5,617,252,656	\$5,573,153,133
Freight.....	\$4,007,014,655	\$3,927,934,028
Passenger.....	1,076,043,334	1,154,058,118
Mail.....	90,975,536	95,919,962
Express.....	143,332,536	104,674,523
All other.....	299,886,595	290,566,502
Total operating expenses.....	\$4,455,650,216	\$4,603,806,907
Maintenance of way and structures.....	\$735,700,633	\$764,662,651
Maintenance of equipment.....	1,259,664,875	1,256,338,463
Traffic.....	86,694,504	84,406,709
Transportation.....	2,174,932,887	2,288,454,499
General.....	157,908,937	167,995,310
All other.....	40,748,380	41,949,275
Net operating revenue.....	\$1,161,602,440	\$969,346,226
Taxes.....	\$304,885,158	\$279,715,492
Uncollectible.....	1,496,581	1,919,884
Operating income.....	\$855,220,701	\$687,710,850
Equipment rents.....	Dr. \$59,722,604	Dr. \$53,137,317
Joint facility rents.....	Dr. 18,832,137	Dr. 18,627,919
Net railway operating income.....	\$776,665,960	\$615,945,614
Operating ratio, per cent.....	79.22	82.61
Average mileage represented.....	235,233.58	234,969.48

¹ Sleeping and parlor car surcharge in passenger revenue for 1922, \$32,891,124; for 1921, \$32,605,082.

RATE EARNED ON TENTATIVE VALUATION —
TWELVE MONTHS ENDED 31 DEC. 1922.

DISTRICT	Net railway operating income 1922;	Rate earned on tentative valuation (annual basis)	
		1922	1921
Eastern district (including Pocahontas Reg.).....	\$342,749,241	4.01%	3.26%
Southern District (exclud- ing Pocahontas Reg.)....	109,718,764	5.05	2.67
Western District.....	324,197,955	4.03	3.59
United States.....	\$776,665,960	4.14	3.33

NOTE.—“Rate earned on tentative valuation” is computed on the tentative valuation made by the Interstate Commerce Commission in ex parte 74 for rate making purposes in that instance, adjusted by the Bureau of Railway Economics to apply to railways of Class I, and to include the net amount of additions from 1 January 1920. The carriers do not agree to the tentative valuation as representing the true value of railway property devoted to the public service. Such value cannot be determined until the valuation is finally completed in accordance with the Act of Congress. The rate earned on tentative valuation is computed so as to reflect seasonal fluctuations in traffic and earnings.

According to the *Boston News Bureau*, a comparison of the returns of 1922 and 1921 shows that, by sections, the most remarkable recovery was made in the South, in New England and in the Northwest. The Atlantic Coast Line, which was only able to earn \$2.63 a share on the common in 1920 earned around \$15 in 1922; and Louisville and Nashville, unable to cover fixed charges in 1921, earned approximately \$14 a share on its common in 1922. Great Northern's net earnings was \$17,276,598 in 1922, against \$12,766,411 in 1921; while Northern Pacific reported net earnings of \$19,450,514 in 1922 against \$10,843,826 in 1921. A striking recovery of earning power was accomplished by the New England roads. The New Haven earned 78 per cent of its fixed charges in 1922 as against 38 per cent in 1921 and the Boston and Maine, which earned about 32 per cent of its charges in 1921 practically covered them in 1922.

The following is a list, from the *Boston News Bureau*, of the larger systems divided into those earning more and those earning less than so-called “standard return,” that is, the income on which government rental during Federal control was based:

CALENDAR YEAR 1922.

1. Roads Earning More Than Their Standard Return.

	Net railway operating income, 1922	Standard return
Michigan Central.....	18,066,109	\$8,126,349
N. Y. C. & S. L. (including L. E. & W.).....	6,601,148	4,013,511
Pere Marquette.....	6,080,575	3,725,718
Cleveland, Cincinnati, Chicago & St. Louis.....	13,747,229	9,938,597
Elgin, Joliet & Eastern.....	5,152,091	2,672,806
Long Island.....	4,967,454	2,921,321
Chesapeake & Ohio.....	14,410,330	13,630,044

	Net railway operating in- come, 1922	Standard return
Atlantic Coast Line.....	\$14,416,370	\$10,273,543
Central of Georgia.....	4,375,578	3,408,809
Illinois Central (including Yazoo & M. Val.).....	26,752,737	20,172,939
Louisville & Nashville.....	17,637,714	17,296,322
Southern Railway.....	20,472,778	18,653,893
Southern Pacific (P. system in- cluding S. S. lines).....	40,459,532	37,554,097
Union Pacific (not including O. S. L. and O. W. R. R. & N. Co.).....	26,621,319	23,670,741
Miss. K. & T. and (M. K. & T. of T.).....	10,484,558	6,528,202
San Francisco.....	15,490,000	13,897,260

2. Roads Earning Less Than Standard Return.

	Net railway operating in- come, 1922	Standard return
Boston & Maine.....	\$6,475,740	\$9,421,461
New York, New Haven & Hart- ford.....	12,074,160	17,173,367
Delaware & Hudson.....	1,216,669	6,983,661
Delaware, Lackawanna & West- ern.....	6,669,022	16,057,942
Erie (including Chicago & Erie)..<	644,910	13,729,068
Lehigh Valley.....	590,084	11,318,714
New York Central.....	53,716,459	59,283,775
Pittsburgh & Lake Erie.....	5,279,742	8,980,219
Wabash.....	4,107,421	5,826,810
Baltimore & Ohio.....	23,735,006	25,890,514
Central of New Jersey.....	3,375,154	9,405,979
Chicago & Eastern Illinois.....	2,721,469	2,946,001
Pennsylvania Railroad.....	73,555,149	80,920,346
Philadelphia & Reading.....	14,328,714	15,793,961
Norfolk & Western.....	18,624,468	20,309,725
Seaboard Air Line.....	4,230,570	6,497,025
Chicago & North Western.....	17,036,305	23,165,985
Chicago, Milwaukee & St. Paul. Chicago, St. Paul, Minnesota & Omaha.....	13,284,245	27,997,512
Great Northern.....	3,812,671	4,931,623
Minn., St. Paul & S. S. Marie... Northern Pacific.....	17,276,598	28,666,681
Oregon-Washington R. R. & Nav. Co.....	7,178,971	10,578,977
Atchison, Topeka & Santa Fe... Chicago & Alton.....	19,450,513	30,190,330
Chicago, Burlington & Quincy... Chicago, Rock Island & Pacific.. Denver & Rio Grande Western.. Oregon Short Line.....	1,376,275	4,491,883
Missouri Pacific.....	35,509,010	39,777,492
Texas & Pacific.....	1,532,189	3,178,315
	25,152,173	33,841,542
	13,934,471	14,912,379
	5,558,452	8,054,260
	6,825,884	10,204,619
	8,247,035	13,978,029
	3,629,472	3,723,435

On page 720 are given, from the same source, the gross earnings for the years 1921 and 1922, the total income and fixed charges for 1922, and earnings on common stocks for the years 1921 and 1922 (000 omitted).

Two great systems—the New York Central and the Pennsylvania—are not included in the table because approximate figures on total income and fixed charges were not available, due to these lines having taken over leased lines during 1922. Earnings on the New York Central, however, were expected to approach \$7.50 a share as against \$7.08 a share in 1921. The Pennsylvania paid \$2.70 a share on its common in 1921 but in 1922 it was expected that it would show well above \$3.00 a share.

	Gross		1922		Earnings on common stock	
	1922	1921	Total income	Fixed charges	1922	1921
Atchison.....	\$225,124	\$228,925	\$45,503	\$12,750	\$11 69	\$14 69
Atlantic Coast Line.....	70,823	66,730	18,000	7,400	15 00	2 63
Baltimore and Ohio.....	200,843	198,622	30,415	25,912	1 41	2 65
Boston and Maine.....	79,800	78,477	7,273	7,245	99 %	31 %
Burlington.....	164,916	168,712	28,152	8,400	11 56	14 99
Chesapeake and Ohio.....	83,511	83,687	15,710	10,580	7 84	6 67
Great Northern.....	103,452	101,317	29,106	17,000	4 84	11 41
Illinois Central.....	174,765	161,886	31,678	12,955	16 53	8 87
Lackawanna.....	74,873	85,977	12,023	5,995	3 57	11 98
Louisville and Nashville.....	121,140	117,149	20,100	10,023	14 00	96 %
Missouri Pacific.....	99,921	109,785	10,500	12,000	87 %	of charges
New Haven.....	123,246	116,405	17,417	22,283	78 %	of charges
Northwestern.....	146,100	144,775	24,279	11,831	7 48	of charges
Northern Pacific.....	96,076	94,538	30,722	15,665	6 07	of charges
Pere Marquette.....	38,397	38,303	10,110	\$ 5,759	\$ 7 03	8 89
Rock Island.....	125,086	139,272	18,705	16,034	\$ 4 36	\$ 5 73
St. Louis-San Francisco.....	82,570	86,292	15,068	14,325	57	2 95
St. Louis Southwestern.....	26,159	25,140	4,831	2,588	8 00	5 50
St. Paul.....	156,950	146,765	15,784	22,000	75 %	9 00
Southern Pacific.....	262,519	269,494	61,163	24,678	10 60	56 %
Union Pacific.....	192,877	200,970	47,080	16,248	12 07	of charges
Wabash.....	57,500	59,217	5,100	4,000	\$ 2 00	of charges

¹ Earned on preferred. ² Allowing for only the year's interest on the preferred stock. ³ Includes taxes, rentals, etc. ⁴ Earned on 6 per cent preferred. ⁵ Earned on preferred A.

Capitalization of United States Railways Compared with those of Other Countries.—

In the following table, prepared by the Bureau of Railway Economics, the total railway capital and capital per mile of the railways of the principal countries of the world are shown. These figures are of more than passing interest and refute the frequently propounded thesis of labor unions that American railways are greatly over-capitalized. The table shows that the capitalization per mile of the railways of the United States is lower than that of the more important countries of the world with few exceptions.

COUNTRY	Capital	Capital per mile
America:		
Canada.....	\$2,588,071,016	\$65,714
United States.....	16,993,920,263	68,787
Europe:		
Denmark.....	115,844,757	80,504
France.....	\$3,856,214,779	186,394
Germany.....	9,664,942,000	279,427
Norway.....	110,464,309	54,095
Sweden.....	405,093,253	43,845
Switzerland.....	459,130,072	141,244
United Kingdom.....	6,517,474,647	274,605
Asia:		
China ¹	203,560,568	54,580
India.....	2,033,356,393	54,913
Japan ²	689,423,599	111,156
Siam ³	22,471,448	38,028
Africa:		
Union of South Africa.....	485,783,208	50,819
Australia:		
New South Wales ¹	386,005,510	76,964
New Zealand.....	181,205,364	60,043
Queensland ²	191,910,929	35,757
South Australia ¹	94,825,368	40,849
Western Australia.....	87,900,446	24,839
Victoria ¹	280,044,383	66,837

¹ Net capitalization.

² State railways.

³ Statistics for the five private companies only; does not include the State and Western railways.

the total amount of the par value of American railway securities, less the par value of those securities still held in the treasuries of the various companies and not issued, and the securities of one road owned by another. In other words it may be defined as the aggregate amount of railway securities outstanding in the hands of the American public.

The valuation of the railroad properties of this country, according to the Interstate Commerce Commission, and arrived at tentatively for ratemaking purposes, was \$18,900,000,000 as of September, 1920, since which date about \$500,000,000 has been added in capital betterments and improvements. This means that the value of the physical properties of the railways of this country used for transportation purposes is according to the Interstate Commerce Commission, approximately \$3,500,000,000 in excess of their net capitalization.

Personnel and Compensation.—According to a report of the Interstate Commerce Commission, 1,804,315 men were employed on Class 1 railways in October 1922, with a total compensation of \$255,514,000. This was the greatest number and compensation since July 1921. The average compensation per employee for October was \$141.51. Agreements concluded between the railways and train crew brotherhoods in the autumn of 1922 continued existing wage scales and working conditions for a year. The carriers abandoned their attempts to include these employees in the second cycle of wage reductions, which, for most other classes, became effective 1 July 1922. Among the reasons for the acquiescence of the carriers in this program is the fact that train crews form a highly specialized labor class in a railway sense and form less than 20 per cent of the number of the personnel and less than 25 per cent of the total payroll. More-

The "net capitalization" of the American railroads, shown as \$16,933,930,263, was defined as

over, train crews are largely on a piece-work basis, being paid for each "run" they make. In the freight service it is possible to make a fairly close adjustment between train mileage and volume of traffic. Other classes of employees cannot be so closely related to variation in service. Following are given the number and compensation of railway employees and grand totals for all employees for three recent annual periods. The figures represent only roughly a year's totals, as they ignore seasonal and other fluctuations from one month to another, but nevertheless represent approximately the relations between classes of employees:

	June, 1922, annual basis		Year 1920		Year 1917	
	Number	Compensation	Number	Compensation	Number	Compensation
Engineers.....	58,904	\$158,182,896	68,780	\$216,342,638	66,385	\$135,610,124
Conductors.....	51,932	127,192,956	59,420	166,194,807	56,510	100,962,270
Firemen.....	70,971	117,526,776	70,892	163,129,989	69,449	86,043,088
All other trainmen.....	121,043	222,403,860	157,431	344,819,347	150,823	180,431,377
Total train crews.....	302,850	\$625,306,488	356,523	\$850,486,781	343,167	\$503,046,859
Per cent to total shop foremen	18.1	23.4	17.5	18.7	19.8	28.9
Shop foremen and inspectors..	28,431	\$75,030,900	53,823	\$124,734,023	39,253	\$49,384,025
Other shop employees.....	461,672	703,810,164	596,816	1,051,708,545	445,864	416,252,931
Section foremen.....	54,675	89,136,396	52,010	96,220,886	50,973	48,011,753
Other section employees.....	329,849	320,563,500	382,957	505,195,278	344,611	230,696,078
All maintenance employees	874,627	\$1,188,540,960	1,085,606	\$1,777,858,732	880,701	\$744,344,787
Per cent to total.....	51.9	44.4	53.4	48.1	50.8	42.8
Grand total.....	1,685,414	\$2,675,192,268	2,031,927	\$3,698,216,351	1,732,876	\$1,739,482,142

Reports filed with the Senate Interstate Commerce Committee in compliance with its order in the Cummins investigation into revenues and expenses of carriers brought to light the fact that as of 30 June 1921 one railway executive received \$100,000 a year; one \$92,500; eight received \$75,000; and 14 from \$50,000 to \$75,000.

Freight Car Loadings.—Car loadings in 1922 totaled 43,713,519 compared with 39,347,158 cars in 1921 and 45,131,188 in 1920. A new record in cars loaded with all commodities except coal was made in 1922, at an increase of more than 15 per cent over 1921, and nearly 3 per cent over 1920. Notwithstanding the five months' coal strike, coal products in 1922 nearly equaled that of 1921. To 16 Dec. 1922 there were 7,093,638 cars loaded with coal, against 7,734,627 during the corresponding period of 1921, and 9,731,796 during the same period in 1920. The loading of grain and grain products increased approximately 7 per cent over 1921, when such shipments were the heaviest on record. Completed reports for 50 weeks show 2,370,625 cars loaded with grain and grain products. Cars loaded with livestock during 1922 increased approximately 9 per cent over 1921 and 5 per cent over 1920. The roads moved more merchandise and miscellaneous freight, which includes manufactured products than ever before, at an increase of 14 per cent over 1921 and 6 per cent over 1920, when freight traffic was the heaviest in history. Loadings of merchandise and miscellaneous freight to 16 Dec. 1922 totaled 26,252,434 cars. Loading of forest products in 1922 con-

siderably surpassed 1921, but was slightly below 1920. Loading for 50 weeks totaled 2,835,437 cars. This exceeded 1921 loadings by 425,424 cars and was within 152,594 cars of 1920. The loss in freight claims in 1922 was estimated at \$100,000,000 an increase of 200 per cent over the loss in freight claims in the years preceding government control.

Rail Fuel Costs.—The coal strike of 1922 increased the cost of fuel to the carriers. Prior to the time the strike began to affect the roads, the average cost of coal a net ton was steadily decreasing from the 1921 level. In July the roads began to be affected by higher prices and

from then on the cost was above the previous year. The following table shows the comparative cost and amount of coal used by months and for ten months of 1921 and 1922:

	1 Cost of coal per net ton		Net tons of coal consumed	
	1922	1921	1922	1921
January.....	\$3 61	\$4 60	8,106,000	9,247,000
February.....	3 56	4 60	7,830,000	7,644,000
March.....	3 49	4 55	8,503,000	7,711,000
April.....	3 46	4 38	6,845,000	7,050,000
May.....	3 55	4 27	6,953,000	7,130,000
June.....	3 83	4 09	6,787,000	6,774,000
July.....	4 32	3 99	6,586,000	6,892,000
August.....	4 87	3 86	7,256,000	7,270,000
September.....	4 85	3 81	7,883,000	7,393,000
October.....	4 27	3 71	9,260,000	8,654,000
Ten months.....	3 98	4 19	76,036,000	75,873,000

1 Cost figures include freight.

Equipment and Replacement.—During the first nine months of 1922 the railways of the United States purchased 1,672 new locomotives and 112,597 freight cars. In October an average of 60 locomotives and 6,500 freight cars were being ordered weekly.

The table on page 722, based on figures compiled by the *Manufacturers' Record*, gives a comparison of the number of cars and locomotives ordered by the railroads since 1900:

Consolidations.—The Transportation Act of 1920 provided for the voluntary consolidation of the railways into a few systems, in accordance with a plan to be prepared by the Interstate Commerce Commission. A tentative plan calling

YEAR	Loco- motives	Cars.
1901.....	4,340	193,439
1902.....	4,665	195,248
1903.....	3,283	108,936
1904.....	2,538	136,561
1905.....	6,265	341,315
1906.....	5,642	310,315
1907.....	3,482	151,711
1908.....	1,182	62,669
1909.....	3,350	189,360
1910.....	3,787	141,024
1911.....	2,850	133,117
1912.....	4,515	234,758
1913.....	3,467	146,732
1914.....	1,265	80,264
1915.....	1,612	109,792
1916.....	2,910	170,054
1917.....	2,704	79,367
1918.....	2,593	114,113
1919.....	214	22,062
1920.....	1,998	84,207
1921.....	239	23,346
1922 ¹	2,500	170,000

¹ Estimated.

for a grouping of the roads of the country into 19 systems was made the basis of hearings in 1922 and early in 1923. These hearings are to guide the Commission in the formulation of the final plan. The law requires that in effecting these consolidations "competition shall be preserved as fully as possible, and wherever practicable the existing routes and channels of trade and commerce shall be maintained."

The several systems are to be so arranged that the cost of transportation as between competitive systems and as related to the respective values of the properties shall be the same, so far as practicable. The aim is that the systems may be able to employ uniform rates in the movement of competitive traffic and, under efficient management, may earn substantially the same rate of return upon their respective property values. In other words, the consolidations are not to be regional or geographical groupings; competition that is sought is to be with respect to service, not rates.

So sweeping a readjustment of railroad relationships as the proposed combinations would entail can be effected only after a considerable period of discussion, and it may be that the carriers themselves will not agree upon the proposed groupings.

The chief consolidation of the year was announced in December. The Van Sweringen Company of Cleveland, Ohio, financiers, held control of the New York, Chicago and Saint Louis, the Chicago and State Line, the Lake Erie and Western, the Fort Wayne, Cincinnati and Louisville, and the Toledo, Saint Louis and Western. On 28 December it was announced in Cleveland that the directors of these roads, referred to as "the Van Sweringen Lines," approved and executed an agreement for the unification of the five roads into a single corporation to be known as "the New York, Chicago and Saint Louis Railroad Company," and directed submission of the agreement and articles of consolidation to the stockholders of the several companies. This consolidation united 1,725 miles in a single system. The Van Sweringen Brothers added the Chesapeake and Ohio Railroad to their holdings in December also through purchase of the controlling interest of H. E. Huntington. This acquisition gives the Van Sweringens control of 4,280 miles of railway, one of the largest

systems of the East, and an outlet to the sea at Fort Monroe, Va., and taps one of the richest coal fields in the East. In England a regrouping and consolidation of several great systems took place. For particulars see subsection on railways in article GREAT BRITAIN. For information on the railways of the principal countries see section on communications in the articles on these countries.

Electrification.—During 1922 active electrification work was more marked in other parts of the world than in the United States. This was due, to a certain extent, to the much higher price of coal and other fuel in these countries than in the United States. The French Government initiated a program of electrification on the main lines of the Paris-Orleans, the Midi and the Paris-Lyon-Mediterranee systems, aggregating 5,200 miles of track to be completed in 20 years. The state-owned lines of Italy are being electrified as rapidly as possible. The most extensive electrification initiated was that of the South African Government Railways totaling 174 miles of route. In the United States the Illinois Central set an engineering commission to plan extensive electrification on that system. It was decided to adopt the 1,500 volt direct current system with overhead trolley. In the city and suburban electric railway field some exceptionally large installations were begun in the United States and in foreign countries. An outstanding activity in this field in the United States was the purchase of light weight safety cars and light weight double truck cars.

Electric Railways.—Statistics based on reports from companies representing one-third of the country's mileage show that despite the growing use of pleasure automobiles and bus competition, more persons rode on electric railways in 1922 than in 1921. The passengers carried exceeded 15,000,000,000. According to a statement, made early in 1923 by C. D. Emmons, President of the American Electric Railway Association, net operating revenues increased 7.4 per cent, although the gross revenue was off 2½ per cent, owing to general fare reductions per passenger from 7.49 cents to 7.33 cents. A decrease of 5.9 per cent in operating expenses served to offset the fare reduction loss. The operating ratio dropped from 75.2 to 72.4 per cent, it was shown, a situation held to indicate the improved condition of the industry and "one of the most favorable signs in its gradual steady recovery."

"Receivership records for the year are encouraging," said Mr. Emmon's statement. Detailed reports from 1 January to 15 Dec. 1922, show that properties with a total mileage of only 517 and total outstanding securities of \$30,986,000 went into receivership, while roads with 458 miles of track and total securities of \$88,729,350 came out.

"Receiverships throughout the industry have decreased gradually since 1919, when the peak was reached with forty-eight companies, embracing total securities of approximately \$535,000,000 going into receiverships.

"Financial conditions with some of the largest companies now in receivership are improving and at least one and possibly more of them may emerge at any time. The general tendency

among regulatory bodies is to keep fares at a level proportionate to increased material and labor costs. The average fare to-day in a group of 275 representative cities is approximately 43 per cent higher than it was at the outbreak of the war, while the average wage increase is 91 per cent, and the average material cost increase is 102 per cent. Inasmuch as labor and material costs constitute about 75 per cent of all operating expenses of electric railways, the proportionate increase in fares over pre-war levels is much lower than is the increase in cost of labor and materials.

"Probably the most important factor in keeping the percentage of increase in the average fare much below the percentage of increase in the cost of wages and materials is that the increase in the average rate of interest has been comparatively slight. Most of the capital invested in companies in years past bore a low rate of interest. The average rate of return to-day upon all the interest-bearing securities in the average electric railway system is very much less than is generally realized. In a great many cases it is less than 5 per cent.

"Fares ranges from 5 to 10 cents in 607 leading cities. The 7 cent fare is operative in the largest single number of cities, 184; the 10 cent fare comes second in 144, and the 6 cent fare third in 102. Other cities of this group are paying: 8 cents, 79; 8 cent fare, 1 cent transfer charge, 26; 5 cents, 20; 5 cents city zone, 5 cents outside, 14; 5 cent fare reduced from higher fare, 13; 6 cent city zone, 7; 5 cent fare, additional charge for transfers, 7; two 5 cent zones, 2; 6 cent zones, 1; 6 cent city zone, 1 cent charge for rides, outside, 1; 6 cent zones, average length two miles, 1.

"Entirely aside from earnings, the local transportation situation is improved in most communities. The bus situation particularly is clarifying. Whereas a year ago bus competition had reached such a point that electric railways in several cities were compelled to suspend operations temporarily, to-day managements, regulatory bodies and the public gradually are co-operating more generally in an effort to find the proper place for the bus.

"At its last convention, the American Electric Railway Association declared that it was the duty of each electric railway company to supply all local transportation in its community and that it should install buses where necessary and be protected from destructive competition by other agencies. Indications point to widespread recognition of the soundness of this policy. Many electric railway companies are adding supplemental bus service and regulatory bodies are restricting bus lines to territory not served by electric railways and classing them as common carriers with the same responsibilities as electric railway lines.

"A dozen cities have relieved their companies of paving charges, and others doubtless will take similar action during the coming year. Recognition of the fact that present paving requirements are largely relics of horse car days when the company horses actually wore out pavement is becoming general."

Railway Motor Cars.—During 1922 many railways initiated the operation of cars propelled by gasoline motors, especially on branch lines

running through sparsely populated sections. Substantial savings in operation have been brought about by the use of these cars and their advocates believe that they will revolutionize the short-haul problem both for passengers and freight. In December a large Eastern builder of such cars reported that 30 railway and other transportation companies were using their cars.

Railway Accidents.—As a result of the educational campaigns launched in recent years by the American Railway Association, the railways made the best record for safety of operation in 1921 and 1922. The statistics of accidents show that the total number of persons of all classes—employees and non-employees—killed on the transportation systems in 1907 was 11,839, the peak year in fatal accidents. The number of fatal accidents has since shown a gradually declining tendency. In 1922 the number of persons killed on the railroads of the United States was 5,776 as compared with 5,587 in 1921. The number injured on the railroads in 1922 was 47,203 compared with 43,324 in 1921. Of those killed in 1922, 2,424 were trespassers while 1,236 were employees. Passengers killed number 193 against 205 in 1921. Passengers injured in 1922 numbered 5,813 against 5,584 in 1921.

A large part of the safety of operation is due to improvement in railroad plant. It has been very much more largely due to the education of employees to the ideas of safety first.

Freight Trains, Cost of Stopping.—According to computations made by operating officials, the cost to a railroad company of stopping an average size freight train is 24 cents if the train is traveling five miles an hour, 69 cents if the speed is 10 miles an hour and \$1.44 if the speed is 15 miles an hour. This analysis appeared in the *Railway and Locomotive Engineering Journal*, and attracted wide attention because of the fact that it represented the first attempt to arrive at a definite conclusion as to this angle of railroading. It was stated that the cost of every movement involved in the stopping of a train had been calculated to the fraction of a cent, and that in order to determine the extra wages paid for the stop those paid the various members of the engine and train crews were taken to be as follows:

Engineers, \$1 an hour; fireman, 77 cents an hour; conductor, 80 cents an hour; and two brakemen at 69 cents an hour.

"If the grade were to be changed to a descending one," says the article in the publication above mentioned, "the distance required to stop would be increased, but the time and distance required to accelerate would be so diminished that the total cost would probably be lessened. On the other hand, if the grade were changed to an ascending one, the time and distance required to accelerate would be so increased as to probably increase the cost. This would also, probably, be increased still more if any curve resistances were introduced into the calculation."

RAILWAY SHOPMEN'S STRIKE. See STRIKES AND LOCKOUTS.

RAMABAI, Pandita, Indian social worker: b. Western Ghats, 1858; d. Khedgoan, April 1922. She was carefully educated by her father,

a man of remarkably advanced views, and gained a thorough knowledge of Sanskrit. Her attainments were so great that in 1877 the pandits of Calcutta conferred on her the title of Pandita (a new distinction), coupled with the name of Saraswati—the Goddess of Wisdom. She lost her husband at an early age, and, moved by the sufferings of child-wives and child-widows, determined to devote her life to their uplift. In 1883, she went to England to seek training for the proper prosecution of her work and while there became a convert to the Christian faith. Thereafter, she traveled in England and in the United States, telling the story of her sister's wrongs, and in the latter country, in 1887, the Ramabai Association was formed, pledged to support for 10 years a school for high-caste Hindu widows. In 1889 she opened a school in Bombay, which was later removed to Poona. During the famine of 1897 she visited the affected districts and rescued 300 high-caste girls from a life of shame. The school and home she opened for them at Khedgoan, some 40 miles from Poona, became known as Mukti (Salvation), while a third school and home is called the Kripa Sadan (Home of Grace). More than 3,000 women, most of them widows (many saved from degradation, and all from hardship incidental to the lot of the Hindu widow), are maintained on a basis of self-help. The Mukti is Socialistic in its operation; its inmates grow their own food, weave their own cloth, manufacture most of the simple articles required, conduct their own education, all under the inspiration hitherto of this woman of genius, this practical mystic, who ranks among the first half-dozen of the daughters of India.

RANDOLPH-MACON COLLEGE, a Methodist educational institution for men, founded February 1832 and located at Ashland, Va. In 1922-23 it had a faculty of 22 members (12 full professors and 10 assistant professors), 200 students, property valued at \$317,029, and an income of \$72,593. Robert E. Blackwell, J.L.D., is president.

RANDOLPH-MACON WOMAN'S COLLEGE, an educational institution, conducted by a board of trustees, under auspices of Methodist-Episcopal Church, South. It was founded in 1893 and located at Lynchburg, Va. In 1922-23 it had a faculty of 50 members, 654 students, property valued at \$1,000,000, and an income, estimated as practically the same as in 1921-22, of \$330,247.93. Dice Robins Anderson, Ph.D., is president.

RAPALLO TREATY. See REPARATIONS.

RATS, Extermination of. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF.

READING CIRCLE, National. See EDUCATION, UNITED STATES BUREAU OF.

RECLAMATION. The National Reclamation Act was approved 17 June 1902. Under it, and the amendments thereto, receipts from the sales of public lands, with certain small exceptions, and a percentage of the royalties from the production of oil, gas, potassium, etc., are paid into what is known as the Reclamation Fund and used in the survey, construction and operation of reclamation projects in arid and semi-arid States. During the slightly more than 20 years the law

had been in effect up to the end of the fiscal year 1921-22 (30 June), there had been invested in construction projects \$134,826,038.23 of which about \$13,000,000 had been repaid. With this expenditure about 1,675,000 acres, it was stated in the annual report of the Secretary of the Interior, had been furnished with a complete water supply, while, under the provisions of the Warren Act, an additional 1,100,000 acres had been furnished a supplemental supply. On government projects proper the area given comprises 31,462 farms which support upward of 30,000 families. The Service has excavated over 200,000,000 cubic yards of earth and rock of which about 14,000,000 yards were placed in dams. Canals built aggregate over 13,000 miles in length, including 27 miles of tunnels and 135 miles of flumes. Structures of all kinds and sizes number over 110,000. Among the larger works constructed are the Roosevelt Dam in Arizona, 280 feet high; the Arrowrock in Idaho, 349 feet high; the Elephant Butte in New Mexico, 306 feet; the Pathfinder and the Shoshone dams in Wyoming, 218 and 328 feet high, respectively. In 1922 the irrigable area included in the various Reclamation Service projects was 1,700,000 acres; the irrigated area, 1,250,000 acres, and the cropped area, 1,175,000 acres. The estimated value of crops raised on the reclamation projects proper, up to and including 1922, was about \$475,000,000. A census value of livestock upon the projects was \$20,000,000 in 1921. Crops of that year were valued at a total of \$49,620,300, as compared with the peak value of \$88,974,137 in 1919. Reclamation Fund collections in 1922 totaled \$4,294,507.34. The amount of funds available for reclamation work in 1921-22 was \$12,770,736.77; expenditures amounted to \$8,467,852.24. During the year construction, operation and maintenance of irrigation works were continued on 25 projects.

During the year it was announced that the establishment of a 60,000 acre irrigation district, co-operative in character and to cost approximately \$2,200,000, had been virtually accomplished by an organization of land-owners in northern Solano County, California. The Sacramento River was stated to be the source of the water supply. In September it was stated that the directors of an association organized to further what is to be known as the North Divide irrigation project, east of the Black Hills in South Dakota, had decided to petition for water rights which will make possible the irrigation of 35,000 acres of land in Rapid Creek Valley. The project will involve an expenditure of over \$1,000,000. In October an application for the formation of the Kings River Water Storage District in California was filed. The project, it was stated, is a co-operative one involving the expenditure of \$30,000,000 and designed to irrigate 1,000,000 acres and provide hydroelectric power for the use of settlers.

In November the Alberta Irrigation Council of Alberta, Canada, awarded tenders for the construction of the Little Bow irrigation project near Carmanagay. There are about 11,000 acres of land included in this project. In September, English papers announced the awarding of a contract for new irrigation works in the Sudan. The amount involved was approximately £4,000,-

000. The scheme includes the building of a dam across the Blue Nile, nearly two miles in length and the building also of about 650 miles of canals and drainage. In India the irrigation of over 5,000,000 acres is the ambitious project of the Sukkur barrage, or damming of the Indus in the Province of Sind, the most important public work ever contemplated in British India. The cost is estimated at about £18,000,000. Despite financial difficulties, the Mysore government in India, it was announced in December, is determined to complete what is known as the great Krishnaraja-Sagara project by means of which the surplus waters of the Cauvery will be impounded and made available for hydro-electric power and extensive irrigation. The dam, when completed, will store 41,000,000,000 cubic feet of water. During the year extensive irrigation projects were completed in Algeria. Since the conquest of Algeria by the French in 1830, seven important dams have been constructed, the largest of which impounds about 25,000,000 cubic meters of water and irrigates about 90,000 acres of land.

RED CROSS, American National. During the fiscal year ended 30 June 1922, the American National Red Cross practically terminated its foreign operations growing out of the World War, with the exception of the American Junior Red Cross activities, with the fulfillment of obligations and commitments abroad. Following the extensive programs of European relief necessitated by the war and the immediate aftermath, there was carried out a program of child health promotion and disease prevention, which was completed as expeditiously as possible, leaving as a legacy to the Central European nations an education in the care of their own people. All legitimate expectations abroad having been met, the American Red Cross concentrated upon its functions in post-war activities at home, the most important of which are assistance to disabled ex-service men and their dependents, disaster relief, public health nursing, the Junior Red Cross at home and abroad. Care of the disabled men who served in the Army and Navy during the World War is regarded as the primary Red Cross responsibility, calling for patient study of an intricate problem and ready readjustments to situations as they exist or develop. This function does not usurp the government's responsibilities, but supplements official activity through harmonious co-operation with official plans and methods. It seeks out the individual and his particular needs and renders many necessary services, which the government, treating this problem in the mass, cannot provide.

In this work 2,679 Red Cross chapters in all parts of the country were engaged—350 more than were working for ex-service men in the previous year when approximately \$10,000,000 was expended by the national organization and the chapters working together. For the current fiscal year National Headquarters appropriated \$3,030,692.90, an increase of \$365,560.84 over the amount spent for ex-soldier service in the year ended 30 June 1921. Between 1 July 1921, and 30 June 1922, the chapters reported 1,665,079 instances of service to ex-service men and their families at an estimated cost of more than \$5,340,000. Over 1,000 persons, paid and volunteer,

engaged in Red Cross duty in hospitals or district offices of the United States Veterans Bureau, in which an average of 8,000 new cases require definite and particular attention each month. Service claims and information service at Red Cross National Headquarters handled 37,200 compensation and insurance claims, 24,560 allotment and allowance cases, and 9,700 miscellaneous claims. Since February 1919, this service has disposed of 64,174 allotment checks payable to veterans which the postoffice department reported undeliverable.

Seventy-two disasters which drove 145,000 persons from their homes, called for Red Cross emergency relief measures of large proportions and cost \$1,441,486.36 during the fiscal year. The year's disasters included 26 floods, 19 tornadoes, 15 fires, 4 epidemics, 2 theatre collapses, 2 shipwrecks (1 airship), a bridge collapse, mine explosion, railway collision and a drought. In one section alone, the Louisiana-Mississippi border, during the flood emergency the Red Cross fed over 35,000 daily.

The Red Cross, the largest employer of public health nurses in the country, maintained 1,240 nursing services which were active in instructing as many communities in health essentials and disease prevention. During the year 313 new services were established by chapters, and several hundred services so convincingly proved their effectiveness that they were taken over by public authorities. The home visits of these 1,240 nurses aggregated nearly 1,500,000, their visits to schools 140,000, and in six months they inspected 1,250,000 school children. In home hygiene and care of the sick instruction, the Red Cross conducted 3,884 classes, enrolled 2,356 instructors and 93,448 students, and issued 42,656 certificates of proficiency. Its nutrition service embraced 1,199 classes with a total of 27,523 children and 2,589 enrolled dietitians. Seventy-eight food selection classes graduated 733 persons. In general health activities the Red Cross chapters maintained 377 health centers, provided 38,751 health lectures, and conducted more than 10,000 clinics in co-operation with local physicians. The total number of nurses enrolled in the Red Cross nursing service is 38,885, an increase of 1,068 over the fiscal year 1920-21.

More than 325 chapters engaged in life saving or water first aid and the American Red Cross Life Saving Corps set a new high mark in enrollment of qualified life-savers. The influence of "Learn to Swim Week" in many localities is reducing the water fatalities through instruction and the wide dissemination of resuscitation methods demonstrated by Red Cross representatives. Some 275 chapters promoted first aid instruction for employees of industrial and public service organizations, police and fire departments and for adults and children in all walks of life, and the National organization has encouraged where practicable the introduction of first aid instruction in schools, colleges and universities. Borglum bronze medals and certificates are awarded winning teams in first aid demonstration and accident prevention work.

The American Junior Red Cross made two outstanding gains during the year—one in the field of domestic activity in linking up the schools with the junior program, the other a gain

of a dozen countries in Europe pledged to organize juniors on the lines of the American organization. For this accomplishment endorsement was extended by the League of Red Cross Societies for the "creation of an international spirit of human solidarity among young people with a view to preparation of a new civilization of peace." There were 24,528 schools in this country enrolled in the Junior Red Cross, with a total of 4,483,845 pupils wearing the "I Serve" button—the badge of unselfish service earned through personal sacrifice. In international school correspondence 736 classes and schools engaged in exchanging letters with 623 schools in European countries, 90 schools in United States territories, 13 in South Africa and 10 in various other parts of the world. Junior work was financed through the National Children's Fund raised by the Juniors at a cost of \$338,237.40.

The following statement indicates the allocation of Red Cross funds under the main types of Red Cross activity for the current fiscal year as compared with the year ended 30 June 1922:

	Budget 1922-23	Expenditures 1921-22
Assistance to disabled ex-service men and dependents.....	\$3,030,692 90	\$2,665,132 06
Service and assistance to 3,600 Red Cross chapters and their branches.....	1,293,240 80	1,818,450 39
Disaster relief.....	750,000 00	911,222 60
Hospital and other services to regular army and navy.....	306,300 00	369,618 26
Assistance to other organizations co-operating in work related to Red Cross activities.....	200,000 00	163,527 85
Other activities in the United States.....	180,406 99	246,254 76
Medical and hospital supplies for Russia distributed by American Relief Administration.....	1,834,044 83	1,182,185 96
Completion of child health program in Europe.....	641,314 10	1,990,890 02
Completion and liquidation of general relief operations abroad.....	810,718 15	2,124,371 84
Assistance to League of Red Cross Societies.....	200,000 00	350,000 00
Management.....	493,154 70	654,193 95
Total.....	<u>\$9,739,872 47</u>	<u>\$12,475,847 69</u>

Near East Relief Work.—On 13 Sept. 1922, following the burning of Smyrna, \$25,000 was made available for the immediate relief of refugees at that place. On 4 October, Chairman Payne authorized the expenditure of \$75,000 for blankets, clothing and medical supplies in the refugee zone and on 8 October President Harding announced the creation of the Near East Emergency Fund. On 9 October, Chairman Payne cabled the American Committee in Athens authority to expend \$100,000 for emergency supplies, while the Paris representative of the American Red Cross was directed to purchase \$50,000 worth of canned milk and rush the shipment. On 13 October Vice-Chairman Albert Ross Hill, in charge of foreign operations, sailed for Greece to take charge of the American relief work. On 17 October 11,000 overcoats were purchased in England and 2,500 cases of milk were purchased in France to be sent to the relief zone, while the Rochester Chapter of the Red Cross donated \$5,000 worth of shoes

for the refugees. The first shipment of food supplies, costing \$76,000, left New York 24 October. On the same day it was announced that commitments for relief supplies amounted to more than \$750,000. On 30 October medical supplies worth \$18,000 were shipped; on 5 November, 25 carloads of flour were forwarded. On 11 November Vice-Chairman Hill reported about 1,000,000 refugees in Greece and adjacent islands. On 25 November it was announced that disbursements for American Red Cross relief work to that date amounted to \$1,500,000. On 15 December Lieut.-Col. William N. Haskell, Director of the Russian Mission of the American Relief Administration, was made American Red Cross Commissioner to Greece while on the same date it was announced that contributions to the Near East Emergency Fund amounted to \$131,799.89. The principal national officers of the American Red Cross (as of 15 Oct. 1922) are the following: Warren G. Harding, president; William H. Taft, vice-president; Robert W. de Forest, vice-president; John Barton Payne, chairman; James M. Beck, counselor; Eliot Wadsworth, treasurer; Mabel T. Boardman, secretary; John Barton Payne, chairman, Central Committee.

International Red Cross Committee.—The International Red Cross Committee, which has its headquarters at Geneva, Switzerland, was the outcome of the conference of Geneva of 1864. It is composed of nine men of prominence, residents of Geneva. From 1864 until his death in 1910, M. Gustave Moynier was its president. Since then the position has been filled by M. Gustave Ador. The chief object of the International Committee is to present the general interest of the Red Cross in all countries. The duties of the Committee, in detail, are as follows: First, to promote the formation of relief societies in countries where they do not exist; second, the Committee serves as intermediary for the national societies, should they request such intervention; third, the Committee watches over the development of the principles of the Geneva Convention and provides, within the limit of its authority, for the perfecting and carrying out of the terms of the treaty; fourth, the Committee publishes a monthly bulletin; fifth, the Committee forms, in case of war, in localities conveniently selected, an international agency for the exchange of communications between prisoners of war and their families and transmission of assistance to the prisoner. At stated periods there is held an International Red Cross Conference, at which are represented not only the societies, but governments, the Knightly Orders of St. John of Jerusalem and of Malta. These conferences have been held in a number of different capitals, the Department of Foreign Affairs extending the government's invitations, and those to the societies being sent out by the International Committee. Occasionally the holding of the conferences has been interfered with because of a state of war, but the majority of them have taken place at the appointed time. The Joint Council of the International Red Cross Committee and the League of Red Cross Societies was created in 1921 with the object of co-ordinating all voluntary relief work throughout Europe. It is com-

posed of members of the International Red Cross Committee and of the League of Red Cross Societies.

League of Red Cross Societies.—In 1919 on the initiative of the late Henry P. Davison, who was chairman of the War Council of the American Red Cross; the Red Cross Societies of America, France, Great Britain, Italy and Japan founded the League of Red Cross Societies, with the object of applying the spirit and organization of the Red Cross in peace time to the improvement of public health throughout the world. The League maintains a permanent secretariat which, working in close accord with the International Committee, seeks to aid National Red Cross societies through its missions, its publications and its technical services. The League is represented on the Health Section of the League of Nations and co-operates with the *Office International d'Hygiene Publique* in Paris. Its General Council, which meets at least once every two years, is composed of delegates from all national Red Cross Societies, members of the League. The Board of Governors, which meets annually, is composed of representatives of each of the five founder societies, ten nominees of societies designated by the General Council, and the Director-General and Secretary-General of the League.

The League in 1922 moved its headquarters from Geneva to Paris, with offices at 7 rue Quentin-Bauchart. The principal officers are: Director-General, Sir Claude Hill; Secretary-General, Dr. Rene Sand; Treasurer-General, M. Andre Pallain.

DOUGLAS GRIESEMER,

Assistant to the Chairman, American National Red Cross.

REDLANDS, University of, a Baptist co-educational institution, founded in 1909 and located at Redlands, Calif. In 1922-23 it had a faculty of 29 members, 386 students, property valued at \$700,654 and an income of \$177,509. Victor Le Roy Duke, LL.D., is president.

REED COLLEGE, a non-sectarian co-educational institution, founded in 1910 and located at Portland, Ore. In 1922-23 it had a faculty of 30 members, 304 students, property valued at \$2,000,000 and an income of \$177,900. Richard F. Scholz, Ph.D., is president.

REFORMED CHURCHES. For statistics of churches, of which the word "Reformed" forms part of the title, see CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

REGIS COLLEGE, a Roman Catholic educational institution for men, founded in 1888 and located at Denver, Colo. In 1922-23 it had a faculty of 25 members, 270 students and property valued at \$400,000. Income figures not given. Rev. Robert M. Kelley, S.J., is president.

REHABILITATION OF DISABLED SOLDIERS. See VETERANS' BUREAU, UNITED STATES.

REINDEER. See ALASKA; BIOLOGICAL SURVEY, UNITED STATES BUREAU OF.

RELATIVITY. See ASTRONOMY; PHYSICS.

RELIEF WORK. See AMERICAN RELIEF ADMINISTRATION; NEAR EAST RELIEF; STUDENT FRIENDSHIP FUND; JEWISH JOINT DISTRIBUTION COMMITTEE, AMERICAN; RED CROSS.

RELIGIOUS MOVEMENTS. Among the Christian churches, the chief event during 1922 was the death of Pope Benedict XV on 22 January. Born at Genoa, in 1854, Giacomo della Chiesa rose to be Archbishop of Bologna and Cardinal, becoming Pontiff in September 1914, as successor to Pius X. Owing to the war, the Vatican was beset with difficulties which may be here briefly summarized. Though situated on Italian soil, it is an international institution. Princes of the church so pro-Ally as Cardinal Bourne of England and Mercier of Belgium there met a thorough German like Cardinal Hartmann of Cologne. In the passion of the moment, the church was accused of favoring the central European belligerents, of bargaining with the Kaiser for a restoration of the Temporal Power, of trying to keep Italy out of the war, and weakening her resolution when she was in it, of discouraging conscription in Quebec and Ireland and of favoring Austria-Hungary against Russia. Amid these cross currents, what Benedict XV really did was to maintain the neutrality of the Vatican. On 12 Dec. 1914, he decreed a truce for Christmas. On 22 Jan. 1915, in an allocution, he declared the church "perfectly impartial" but condemned "every injustice by whatever side it be committed." In view of Bethmann-Hollweg's admission that the invasion of Belgium was illegal, the terms of this allocution were applied by Cardinal Gasparri, Secretary of State, to that case (6 July 1915). It was the Pope's intervention that arrested the deportation of Belgian workmen and facilitated the exchange of prisoners. The Pope refrained, moreover, from condemning the British blockade of Germany.

His efforts for peace were continuous. On 7 Feb. 1915, he ordained a day of prayer. On 28 July 1915, the first anniversary of the outbreak of war, he extended an especial blessing to the belligerent that should first hold out the olive branch. In February 1916, he made a personal appeal for peace to the Emperor of Austria. Two months later, he addressed President Wilson, in somewhat similar terms. On 16 Jan. 1917, he gave full support to President Wilson's Peace Note of the previous 18 December. On 1 Aug. 1917, he issued his own famous peace note, advocating "complete and reciprocal condonation" of damages and war expenses, to be followed by disarmament. Finally, in 1918, the Pope condemned as "a wanton massacre," the sacrifice of life at St. Gervais Church in Paris which had been bombarded by the Seventy Mile Range Gun of the Germans.

With Austria-Hungary shattered, it might be thought that the Roman Catholic Church would emerge the weaker. The reverse is the truth. In August 1914, there were 20 nations in more or less direct diplomatic contact with the Vatican. At the Armistice, there were 31 such nations of which seven maintain Ambassadors accredited to the Holy See and 20 maintain Ministers. England and Holland are included, while Japan, where Catholic missions

are active, has been considering such representation.

In July, 1922, the complete works of Anatole France were placed on the 'Index Expurgatorius' but on the other hand, Rome had gained (August 1922) a distinguished convert in Gilbert K. Chesterton, the English master of paradox, while (June 1922) the two Presbyterian Assemblies of Scotland appointed committees to consider the rapid increase of the Catholic population in that country. This is a local situation which to some extent resembles the pressure of the growing Catholic population of Quebec or Ontario. In Quebec, a great sensation has been caused by the burning of numerous churches, including the cathedral of Notre Dame in the city itself, and the famous Shrine of Saint Anne de Beaufré. There is no evidence of incendiarism, but the epidemic of fires, which did not spare the Laval University, aroused comment.

The immediate problems to be faced by the church have been political and social rather than doctrinal. Hence the significance of the election (6 Feb. 1922) of Achille, Cardinal Ratti, Archbishop of Milan, to be Pope Pius XI. Born at Desio, Italy, in 1857, he had served as Librarian of the Vatican and as Papal Nuncio to Poland after the Armistice. It was only in June 1921 that he received the Cardinal's hat. An Alpine climber, he has been called "the young man's pope."

On Election, his first act was to deliver his blessing, *urbi et orbi*, not within St. Peter's, but from the External balcony, a symbolic indication that the Pontiff was no longer in the former sense to be regarded as "a prisoner." The American Cardinals had not reached Rome in time for the Conclave, but the Pope indicated that on future occasions the other Cardinals must await their attendance. In other ways, he has broken through traditions. He posed (August, 1922) for the movies. To the Knights of Columbus, now active in Italy, he has allotted ground near the Vatican for baseball and (May) witnessed a game. He has praised athletics and aroused curiosity on the question whether he will leave the Vatican, either for processions in Rome or for occasional residence in the villa of Castel Gandolfo. Following the example of Benedict XV, he has insisted on modesty of dress for women, including those who ascend the Holy Staircase on their knees. In December, 1920, Benedict XV denounced the Y. M. C. A., as an organization that "instills indifference and apostasy." But the Church itself has had none the less to face the problem of youth in a new world. In February 1922, the Consistorial Congregation ordered the discontinuance of the National Catholic Welfare Council's work in the United States, which had the support of 87 out of 103 Bishops. In August, this order was reversed on condition that all American Bishops be not required to participate. One difficulty had been the enquiries into industrial disputes and similar matters, furthered by Dr. John A. Ryan of the Catholic University, Washington. Among the Protestant Churches, a somewhat similar situation arose when the Inter-Church World Movement issued a report, severely criticizing the United States Steel Corporation because of the steel strike.

The Pontificate of Benedict XV witnessed a measure of reconciliation between the Vatican and the Italian monarchy. In 1920, an arrangement was made at the instance of King Alphonso of Spain and King Albert of Belgium whereby the heads of foreign and Catholic states could visit the King of Italy without offence to the Church. Cardinals are welcome at the Italian Court and Catholics now vote at the Italian elections. Indeed, they have been organized by Don Luigi Sturzo, an able priest, into the Popular Party, with an advanced Social Programme which includes the right to strike for workmen, universal suffrage for men and women and free education. On his election, Pius XI received the congratulations of the Bonomi Government which, however, fell in consequence—and he admitted Italian officers to his Coronation. The so-called Roman Question—that is, the claim of the Pope to territorial sovereignty—has not been settled but its urgency seems to have been eased. In December 1922, the Pope renewed his formal protest against the decisions of 1870.

As Papal Nuncio in Poland, Cardinal Ratti wielded an influence which extended into Lithuania and Russia. In February, he startled the world and especially France by prayers for the success of the Genoa Conference at which Russia had a seat. The Revolution in Russia has been undoubtedly a severe blow to the Eastern Orthodox Church and there is thus an especial opportunity for an rapprochement between the Greek and Latin churches. Easter, 1923, was, however, observed by "Eastern" Christians with renewed devotion and there were renewed symptoms of Bolshevik persecution.

The Pope has strongly urged that there be international guarantees for the Holy Places in Palestine, thereby voicing his suspicions of Jewish influence, as it might be exercised under the British mandate.

In November 1922, a serious issue arose because of a law approved on referendum in Oregon which in effect places a ban upon all denominational and private schools after 1926. An appeal is being made to the Supreme Court. Negotiations, too, have been proceeding between the Vatican and France, over many matters—the appointment of bishops, religious congregations and so on—which were affected by anti-clerical legislation.

About the statistical volume of organized religion in the United States, certain figures are eloquent. Dr. Walter Laidlaw calculates that between the years 1906 and 1916, the percentage of church members increased from 40.4 to 41.3. In March 1922, Dr. H. K. Carroll stated that in 1921, fifty denominations added 761,727 members to their roll.

In the Protestant Churches, there has been evident an abundance of social service and civic influence. The difficulty which has had to be faced in their case is doctrine. Broadly, there are two parties confronting one another—the Modernists or Liberals and the Fundamentalists who hold to the creeds and include the Premillenarians, that is, believers in the return of Our Lord before the Millenium. Between these combatants, the battleground is the Bible. For the Fundamentalists, W. J. Bryan has attacked

Evolution with a vigor that almost led States like Kentucky to legislate against Darwin. The Modernists, on their side, have been championed by the Rev. Percy Stickney Grant, of the Church of the Ascension, New York, who denied that Jesus had the power of God, and also the Virgin Birth, miracles and the fall of man. The question of trying Dr. Grant for heresy was raised but Bishop Manning has not proceeded to this length. Many Liberal theologians are supporting Dr. Grant on intellectual grounds.

In June, the Northern Baptists held a convention at Indianapolis where an attempt was made by the Fundamentalists to secure a credal test within that body, but this proposal was defeated.

Among the Presbyterians, the fight has raged around the person of Dr. Harry E. Fosdick, a Baptist who preaches from a Presbyterian pulpit in New York. At the instance of the Presbytery in Philadelphia, Dr. Fosdick's opinions were considered by the New York Presbytery but no action was thought necessary.

Other incidents in the struggle were a volume renouncing the Christian faith as held hitherto, from the pen of Dr. Samuel Davis McConnell, once Rector of Holy Trinity Church, Brooklyn, and for 50 years a minister; and a challenging utterance by Bishop William Montgomery Brown, formerly of Arkansas, (October 1921). In December 1922, Dr. Arthur Wakefield Slater, Professor of Biblical Literature was dismissed from William Jewell College, Kansas, because of his advanced views. A case in the other direction was the retirement in 1919 of Bishop F. J. Kinsman who left the Protestant Episcopal Church because of her Modernism.

In England, there is a somewhat similar situation. In 1921, and again in 1922, Modernist Churchmen held conferences which discussed the divinity of Christ and the relation of the Christian to other faiths in terms which no one could pretend were in accordance with the creeds. The trial of Rev. H. D. A. Mayor for heresy did not however succeed. How far matters had drifted may be judged from the fact that the London Missionary Society has had to deal with a hymnbook prepared in India, from which the name of Christ was to be omitted lest it give offence to Moslems and Hindus. We have moreover demands for an abridged Bible or, to quote H. G. Wells, a new Bible altogether.

While the Modernists forswear miracles, Roman Catholics claim that they are still occurring and they give instances. Among Protestants and Jews, there has been, moreover, an amazing interest displayed in all varieties of "faith-healing," whether religious or auto-suggestive, as administered by Dr. Emile Coué. The ministry of the English healer, James Moore Hickson, was endorsed by Bishop Manning.

In many quarters, there is a desire for the reunion of the Churches. The attitude of Pope Benedict XV had been that he could not join any world conference, having this end in view. But in September 1922, the Oecumenical Patriarch of Constantinople, Meletios, wrote on behalf of the Holy Synod, recognizing the validity of Protestant Episcopal orders. Between the

Established Church of England and the Free Churches of that country, deliberations with the object of promoting intercommunion are going forward, and in 1920, Dr. J. H. Jowett, well known in New York, preached in Durham Cathedral. The Inter-Church World Movement with its appeal to the United States for large funds, opened up too many issues to be an aid to reunion. But in preaching the inaugural sermon before the League of Nations, the Archbishop of Canterbury occupied the Chair of John Calvin at Geneva. The curious proposal for a Bahia Temple in Chicago, to include all religions, has not materialized.

For the Salvation Army in the United States, there has arisen something of a crisis owing to the proposed recall (September) of Commander Evangeline Booth, by orders from General Booth in London, and contrary to a strong American sentiment.

At Copenhagen, in August, there was held an important conference, representing the Churches of 25 countries, at which international friendship was promoted.

Perplexing as is this era, never was religion more widely discussed. In New York, huge crowds thronged to see the screen versions of Hall Caine's "Christian" and Winston Churchill's "The Inside of the Cup." In Germany, the Republic allows unwilling members to leave the state church, now de-Kaiserized, and many have done so, but, among the young, there are signs of a returning and more genuine faith. The American Bible Society reports an unprecedented demand for the Scriptures.

PHILIP WHITWELL WILSON.

RENSSELAER POLYTECHNIC INSTITUTE, a non-sectarian educational institution for men, founded in 1824 and located at Troy, N. Y. It is the oldest school of engineering in America and is generally recognized as one of the best. Statistics for 1922-23 show a faculty of 90 members, 1,100 students, property valued at \$5,300,000, and an income totaling \$390,000. Palmer C. Ricketts, E.D., LL.D., is president.

REPARATIONS. With the conclusion of the year, 1922, there arose in Europe a grave crisis. Under the Treaty of Versailles, Germany was made liable for Reparations, both in money and in kind. On 9 Jan. 1923, the Reparations Commission, meeting in Paris, declared Germany had defaulted in respect of certain deliveries of wood and coal. This declaration was made by vote of France, Italy and Belgium who formed a majority on the Commission. Great Britain dissented and Roland W. Boyden, the American observer on the Commission, stated that in the interests of the economic revival of Europe the Treaty should be revised as soon as possible, which view, it was explained, was personal rather than official. On 10 Jan. 1923, France and Belgium marched large forces into the Ruhr valley and occupied Essen, the headquarters of Krupp's Works, and Bochum where Stinnes is supreme. Anticipating this drastic action, the United States Senate, on 6 Jan. 1923, passed a resolution by 57 to 6 asking the President to withdraw the American troops—rather more than 1,000 in number—who still remained at Coblenz on the Rhine, under the

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command of Maj.-Gen. Henry T. Allen. A few days later, the President complied with this request. Germany, moreover, withdrew her diplomatic representatives from Paris and Brussels. The technical default amounted to only 16½ per cent at most of the deliveries due. But larger issues were involved.

By the terms of the Armistice agreed to on 11 Nov. 1918, it was thus laid down: "Compensation will be made by Germany for all damage done to the civilian population of the Allies, and to their property, by the aggression of Germany by land, by sea, and from the air."

In the subsequent British general election of 1918, David Lloyd George talked about Germany paying "the cost of the war," but in fact, her liability did not include such "an indemnity," being defined strictly as "reparations."

On 28 June 1919, the Treaty of Versailles was signed and by it, these reparations were stated to be in respect of:

Damage to injured civilians, to the victims of German cruelty and their dependents; and to maltreated prisoners of war. Naval and military pensions.

Cost of assisting prisoners of war and their dependents and allowances to dependents of mobilised persons.

Compensation to civilians, subjected to forced labor, and for property seized, injured or destroyed. Return of levies, fines and similar exactions imposed on the civilian population.

Over the inclusion of naval and military pensions in this schedule, there has been much controversy. It was argued that the item was not "a reparation" but "a cost of the war." Lloyd George, however, persuaded both General Smuts and President Wilson that his interpretation was correct and pensions were thus entered on the bill. It is estimated that they represent more than half the total demanded. J. M. Keynes, the economist, put the figure at two-thirds.

What does and what does not constitute "a reparation" are questions which, however, have become entirely subordinate to the further question what, in any event, Germany can be made to pay. In the Franco-German War of 1870, no material damage was inflicted on Germany. The fighting was wholly in France. "Reparation" did not enter the discussion and the "Indemnity" then exacted was 5,000,000,000 francs or \$1,250,000,000. With the addition of \$60,000,000 for interest, this indemnity was paid punctually and completely within four years.

By the Treaty of Versailles, Germany was to make a preliminary payment of 20,000,000,000 gold marks or about \$5,000,000,000, either in gold or other values, by 1 May 1921. On that date, the Allies held that Germany had only paid the equivalent of \$2,000,000,000 and the balance of \$3,000,000,000 was claimed. Germany disputed the amount of the credits allowed her on goods, etc., which she had surrendered and claimed that, on 1 May 1921, she had met in full whatever obligations the Treaty imposed.

This controversy was, however, only a detail compared with the larger question what should be the total sums to be exacted from Germany in years to come. Many conferences were held at Spa, in July 1920; in Paris, on January 1921; in London in March 1921 and

May 1921. The Spa Conference divided reparations among the Allies thus: France, 52 per cent; British Empire, 22 per cent; Italy, 10 per cent; Belgium, 8 per cent; Other Allies, 8 per cent.

Of reparations, the United States thus claimed nothing and was allotted—nothing!

The Paris Conference demanded from Germany (Jan. 1921) a sum of \$56,000,000,000, spread over 42 years, with an addition of 12 per cent levied on her exports. Germany replied with an offer of \$12,500,000,000 which the Allies refused. Duisberg, Ruhrort and Dusseldorf, on the right bank of the Rhine, were occupied; a customs barrier between the occupied areas and the rest of Germany was set up and there were other disciplinary measures, none of which drew money from Germany.

In May 1921, the demand on Germany was reduced to \$33,000,000,000 which sum, under protest, the Germans accepted. The Reparations were to consist of bonds, called A, B and C. The A and B bonds, which may be considered together, amounted respectively to \$3,000,000,000 and \$9,500,000,000. Interest on them was fixed at 5 per cent with 1 per cent for a sinking fund, or 6 per cent in all. The C bonds amounted to \$20,500,000,000 and were only to be issued as Germany proved able to meet the charges on them. Tabulated, the position was thus.

"A" bonds.....	\$3,000,000,000
"B" bonds.....	9,500,000,000
"C" bonds.....	20,500,000,000
	<hr/> \$33,000,000,000 <hr/>

At 6 per cent, the charge on these bonds works out:

"A" bonds.....	\$180,000,000
"B" bonds.....	570,000,000
	<hr/> \$750,000,000 <hr/>
"C" bonds.....	1,230,000,000
	<hr/> \$1,980,000,000 <hr/>

Assuming a complete payment of reparations by Germany, she would thus transmit money or values every year equal to 50 per cent more than the entire indemnity—\$1,250,000,000—paid in four years by France to Germany after the War of 1870. In the opinion of every authoritative expert, this would be an impossible financial operation, nor was it seriously contemplated by the Reparations Commission. In May 1921 the payments receivable from Germany in any given year were fixed thus: (1) \$500,000,000; (2) 26 per cent of the value of her exports, a percentage that amounts at most to \$300,000,000, many estimating the sum at a much smaller figure. At best, then, Germany was not seriously expected to do more than meet the interest and sinking fund on Bonds "A" and "B."

For 1921, she was to pay \$250,000,000 and this she did. A further sum of \$75,000,000, chargeable on exports, was held to be covered by the values of coal, ships, etc., delivered during that year. Up to this date, therefore, that is 31 Dec. 1921, no default was alleged. In fact, the total payments credited to Germany on account of reparations amounted then to

\$1,622,000,000, to which must be added a further sum of \$1,250,000,000, found for armies of occupation, interallied commissions and so on. So expensive were these matters that on 1 April 1922, it was reckoned that no money was yet in sight for meeting the charges on the A, B and C Bonds.

Under the Agreement of May 1921, the payment due during 1922 was to be \$500,000,000, in four instalments, i. e., \$125,000,000 on 15 Jan., 15 April, 15 July and 15 Oct., with the addition of whatever was chargeable on exports.

On 13 January the Reparations Commission extended Germany's time for payment of the first instalment but demanded \$7,500,000 every 10 days, being one-fourth of what was due on exports.

On 28 January Germany requested a moratorium for 1922, with other relief.

On 11 March 1922 the Reparations Commission was confronted by a bill from the United States for \$241,000,000, the cost of the American Army of Occupation on the Rhine. In respect of this item, no payment has been made, but on 22 March Secretary Hughes demanded the priority which, under the Treaty, is stipulated for such claims. On 11 April, Great Britain, France and Belgium, in separate notes, agreed to the parity of treatment on which the United States had insisted.

But, in the meantime, on 11 March 1922, Germany's first 1,000,000,000 marks, \$250,000,000, had been divided thus:

Great Britain	\$125,000,000
France	35,000,000
Italy	7,500,000
Belgium	62,500,000
	<u>\$250,000,000</u>

It appears that these disbursements include refunds on credits allowed to Germany, since the Armistice.

On 22 March, the Reparations Commission again adjusted the payments to be made during 1922. They were to be \$180,000,000 in cash and \$362,500,000 in material or \$542,500,000 in all. This was \$207,500,000 less than the sum of \$750,000,000 which, as we have seen, was required to meet the charges on the A and B Bonds.

The actual payments for 1922 were arranged thus:

Up to 22 March	\$70,500,000
April	4,500,000
Six months at \$12,500,000 a month	75,000,000
Two months at \$15,000,000 a month	30,000,000
	<u>\$180,000,000</u>

These modified terms, granted to Germany on 22 March 1922, were not fulfilled by her. On 31 May, Germany was offered a conditional moratorium for the rest of the year, and on 12 July she asked that the moratorium be fixed for three years. In that month, a payment of \$8,000,000 was demanded of Germany and paid by her, and in August, credit notes were demanded of Germany for Belgium, amounting to \$67,500,000. On 30 September, however, the

total sums credited to Germany on account of Reparations had only increased thus:

On 30 Sept. 1922	\$1,894,500,000
On 1 January 1922	1,621,964,000
	<u>272,536,000</u>

Increase in nine months

Against the total for \$1,894,500,000 paid up to 30 Sept. 1922, there have to be set debits against Germany as follows:

Spa coal advances	\$98,000,000
Allied occupation costs	602,250,000
American troops, cost (estimated)	300,000,000
	<u>\$1,000,250,000</u>

The total net receipts from Germany on the above date were thus only \$894,250,000 gold, this after allowing credit for rolling stock, ships, coal, timber and assets in ceded territories like a part of Schleswig-Holstein.

The arrangements made with Germany during 1922, whether fulfilled by her or not, terminated with that year. On 15 Jan. 1923, the terms of May 1921 were resumed and Germany thus became liable once more for her quarterly instalment of \$500,000,000, that is for \$125,000,000, with whatever sum had accrued as a 26 percentage on her exports. This was the situation which created the crisis in January 1923. An illustration of the futility of the matter was furnished to the British House of Commons in January 1922 when it was stated that Britain had then received from Germany £46,647,615 and had spent on her Army of Occupation £53,000,000.

While the struggle over Reparations was developing, the economy of Europe was profoundly disturbed. The exchanges were completely upset, the German mark, the Russian ruble and the Austrian crown falling to values which became negligible. With the exception of Britain, no country, save some of the smaller neutrals, was attempting to balance its budget and there were vast issues, in one form or another, of paper money. From the United States, Europe had borrowed, with accrued interest, about \$11,000,000,000, to which had to be added about \$4,000,000,000 of commercial credits. The British government alone was willing and able to offer payment. With currency disorganized, with tariffs subdividing the continent into minute industrial areas, with Russia politically segregated and with Germany sullenly resisting financial demands which, in the opinion of all bankers in every nation, had no meaning save as pretexts for possible war, it was hopeless to attempt to float loans for the reconstruction of the Old World. On Britain, dependent as she is on foreign trade and shipping, the paralysis of Europe bore hardly. The number of her unemployed was nearer 2,000,000 than one and is still nearly 1,500,000.

When, therefore, the year 1922 opened, David Lloyd George, as Prime Minister, was engaged with feverish energy on what proved to be his final attempt to reconcile Europe with herself. Personally, M. Briand, the French Prime Minister, was sympathetic, but a powerful section in France, led by M. Poincaré, was profoundly suspicious. On 21 Dec. 1921, Lloyd George and

Briand conferred in London. A week later, there was a meeting in Paris between French and British financiers, led by Louis Loucheur, French Minister of Reconstruction, and Sir Laming Worthington Evans, British Secretary of State for War. At this meeting, it was proposed to found an international corporation to finance the reconstruction of Europe, with a capital of \$100,000,000, to be shared equally by Great Britain, France, Germany and, if she consented, the United States. No such corporation was, in fact, established.

On 6 Jan. 1922, the Allied Supreme Council met at Cannes. The Prime Ministers of Great Britain, France, Italy and Belgium attended, with the Ambassador of Japan at Paris. Ambassador Harvey "observed" for the United States. The Reparations Commission and many officials also attended.

The Council unanimously agreed to call an economic and financial conference of the powers. Germany, Austria, Hungary, Bulgaria and Russia were to be among those invited. Wherever possible, Prime Ministers themselves should attend, so that rapid decisions might be reached. Summarized, the principles to be accepted at the Conference were to be:

(1) Each country has the right to choose for itself its own *régime* of property, its economy and its government. (This meant, of course, that Russian Communism was not challenged, as applied by Russians to themselves.)

(2) Foreigners cannot place capital in a country unless their property be respected and the fruits of their enterprise be assured.

(3) National and municipal debts must be recognised, therefore, and foreign interests indemnified for confiscation of property. There must be legal and juristic punishment and the impartial execution of all commercial and other contracts.

(4) Convenient means of exchange should be made available.

(5) Nations must "abstain from all propaganda which is subversive of the political system established in other countries."

(6) Nations ought to take a common engagement to abstain from all aggression on their neighbors.

On 10 January, the text of an Anglo-French Alliance was provisionally agreed upon. After reference to the two invasions suffered by France within living memory, to the cost of repelling the latest of these invasions, and to the consideration that guarantees for the security of France are indispensable for the restoration of the stability of Europe, the security of Great Britain and the peace of the world, the draft treaty in Article I stated: "In case of direct and unprovoked aggression against the Territory of France by Germany, Great Britain will place herself immediately at the side of France with her naval, military or air forces."

By Articles II and III, Great Britain undertook to resist, with France, any violation by Germany of the military and naval safeguards of the Treaty of Versailles. The alliance was to be renewable for 10 years but was to impose no obligation on the British Dominions (other than Britain) "unless or until approved by the Dominion which is interested."

At this stage of the Cannes Conference,

M. Briand was summoned to Paris where, owing to criticism, he found it necessary to resign office; M. Poincaré, the chief of the critics, became Prime Minister. He held that the British alliance was useless without a Military Convention and the Alliance was thus declined by France.

On 25 Feb. 1922, Lloyd George met Poincaré at Boulogne. The conditions under which, with obvious reluctance, France would send delegates to Genoa to meet the Germans and Russians were laid down — namely, no change in Reparations and the Treaty of Versailles and no repudiation of Russia's debt to France. Moreover — as at the Washington Conference — France objected to any discussion of disarmament — meaning thereby particularly disarmament on land.

On 10 April 1922, the Genoa Conference met. Thirty-three nations were represented, including Ireland, which country was thus for the first time recognized in such diplomacy. The United States authorized Richard Washburn Child, the Ambassador at Rome, to act as unofficial observer. Prime Minister Facta of Italy presided. "There are no longer enemies and friends," said he, in his address of welcome, "there are neither victors nor vanquished." Lloyd George then condemned the "snarling" which still went on in Europe and expressed the hope that as Genoa had helped Europe to discover America, so might Genoa help America to discover Europe.

M. Barthou for France said, "We have come here to act. Europe is strewn with ruins . . . The French delegation will speak no word of hatred. It does not wish anyone humiliated." When, however, Tchitcherin, for Russia, proposed disarmament, Barthou immediately objected.

On 17 April amid complicated and, as they proved, fruitless discussions of finance and commerce, it was suddenly announced that, at Rapallo, Russia and Germany had concluded a Treaty, establishing diplomatic and consular relations and mutually renouncing war claims, the one country against the other. This Treaty was resented, particularly in France, as a breach of faith with the Conference. It was suspected that behind it lay a secret military convention. It is fair to add, however, that the principle of surrendering war claims and cancelling international debts with a view to promoting the trade and prosperity of Europe was one which many statesmen and nearly all bankers wished to see applied, not to Russia and Germany alone but to the whole of Europe. Moreover, on 24 May, Italy also negotiated with Russia a commercial treaty.

The Genoa Conference failed. When asked to recognize her foreign obligations, Russia entered enormous counter-claims in respect of the war itself, and of the campaigns against her waged by Kolchak, Denikin and Wrangel, with the alleged assistance of the Allies. She further contended that after her revolution in the 18th century, France herself had repudiated two-thirds of her debt. On these lines, however dialectically adroit, it was obvious that the discussion was useless. To save the face of the Conference, it was arranged that, in June, the Russian situation should be discussed again by ex-

perts at The Hague, but from these later negotiations, nothing substantial resulted.

The lesson of Genoa was plain. To attempt to reconstruct Europe without limiting armaments, surrendering reparations and writing off international debts which would and could never be paid, was not business. The Soviet delegates doubtless used wild and whirling words, often intended deliberately to provoke "the bourgeoisie" abroad and delight the Bolsheviks at home, but if they had been sweet reason itself, they could not have solved a problem, rendered insoluble by anterior conditions.

In May, the Germans suggested that, if they had a loan, they might be able to meet their obligations under the Treaty of Versailles. The Commission, therefore, invited a committee of international bankers to meet in Paris. The committee included J. Pierpont Morgan, the New York banker. With regard to certain conditions—that she balance her budget by new taxation, recover capital that had been exported and accept Allied supervision of her finances,—Germany was entirely amenable. But it was plain to the Bankers' Committee that no loan of, say, \$1,000,000,000 was possible unless the total fixed for reparations was reduced. The whole of 6-7 June was devoted by the Reparations Commission to a bitter fight in which Sir John Bradbury, for Britain, carried Belgium, Italy, and Roland W. Boyden, the American observer, against France on a resolution that the bankers be permitted to discuss a reduction of reparations and report freely upon it. The bankers, therefore, declared that "the resumption of normal conditions of trade between countries and the stabilization of the exchanges are impossible without the definite settlement of the reparation payments." In conformity with the attitude of his government, M. Sergent, the French banker, refused to sign the report. With France thus dissenting, the idea of granting financial aid to Germany was abandoned and while it was revived in December, when Pierpont Morgan saw President Harding and the German Ambassador at Washington, the same insuperable objection was encountered. France was still unwilling to allow the total of reparations to be discussed.

The bearing of reparations on European finance as a whole is further explained in the section, dealing with European debts.

PHILIP WHITWELL WILSON.

RESEARCH COUNCIL, National. See NATIONAL RESEARCH COUNCIL.

REUNION, or BOURBON, an island possession of France, about 420 miles east of Madagascar. It has an area of 970 square miles and in 1921 had a population of 173,190, including 167,947 Europeans, of whom 167,789 were of French origin, 2,194 British Indians, 1,052 Chinese, 885 Africans, 709 Arabians, and 403 natives of Madagascar. Chief towns are: St. Pierre, 27,895; St. Denis, 21,538; St. Paul, 19,456; St. Louis, 14,803. Chief products are: sugar, rum, coffee, manioc, tapioca, vanilla and spices. Rice and grain are the chief imports. Total value of exports in 1920: 88,980,113 francs; of imports, 53,541,861 francs. There are 80 miles of railway. The yearly budget is

balanced at about 12,000,000 francs. The island is administered by a Governor, assisted by a Privy Council and an elective Council General. In the French Legislature the island is represented by one Senator and two Deputies. The chief port of the island is Pointe-de-Galets, which has rail connection with St. Pierre. There are 16,731 pupils in the primary schools and 327 in the Lycee.

RHODE ISLAND, one of the original 13 States and the smallest in the Union. It is situated in New England and bounded on the north and east by Massachusetts, south by the Atlantic Ocean, and west by Connecticut. Its area is 1,248 square miles, of which only 1,060 square miles is land. In 1920 its population was 604,397. It is 48th in order of size and 38th in order of population. Its population of 566.4 persons to the square mile makes it the most densely populated State of the Union. In 1920 the population included 593,980 whites, 10,036 negroes, and 381 Asiatics and Indians. The same year the foreign-born residents of the State numbered 173,499, of whom 28,887 were French Canadians, 32,241 Italians, 7,525 English Canadians, 5,692 natives of Scotland and 3,126 Germans. The chief cities, with their populations in 1920, are: Providence, the capital, 237,595; Pawtucket, 64,248; Woonsocket, 43,496; Newport, 30,255; West Warwick, 15,461; Central Falls, 24,174; Cranston, 29,407, and East Providence, 21,793. The urban population is 97½ per cent of the total.

Religion.—The principal Christian denominations have an aggregate membership of 344,060, of whom 261,312 are Roman Catholics, 20,176 Episcopalians, 18,771 Baptists, 10,531 Congregationalists, 7,801 Methodists and 2,205 Presbyterians.

Education.—In 1922 the State appropriation for education was \$788,816. In that year there were 2,971 teachers in the public schools of the State and 96,358 pupils. There are 163 high schools with 383 teachers and 9,119 pupils. For higher education there is a State College of Education and Agricultural and Mechanical Arts College. Brown University at Providence is one of the well-known institutions of higher learning in the country.

Finances.—At the beginning of the fiscal year 1922 the balance on hand amounted to \$1,422,911.81. Receipts during the ensuing year was \$7,174,524.67. Disbursements for the same period amounted to \$6,803,367.98, leaving a balance on hand at the beginning of the fiscal year 1922-23 amounting to \$1,794,068.50. For the current fiscal year the estimated receipts amount to \$5,280,203, while authorized expenditures for the same period aggregate \$6,497,709.96. The bonded debt of the State in 1922 amounted to \$11,527,000. The assessed value of real property in 1922 was \$642,139,076; of personal property, \$405,251,141.

Production and Industry.—The census of 1920 reported 4,083 farms with an area of 331,600 acres and a total value of all farm property of \$33,636,766. The chief crops, with their acreage, yield and value, for the year 1922 were: corn, 14,000 acres, 560,000 bushels, \$672,000; oats, 1,000 acres, 31,000 bushels, \$19,-

000; tame hay, 45,000 acres, 54,000 tons, \$1,431,000; potatoes, 3,000 acres, 270,000 bushels, \$243,000; apples, 200,000 bushels; peaches, 28,000 bushels, and pears, 12,000 bushels. On 1 Jan. 1923 there were in the State 6,000 horses, valued at \$798,000; 27,000 milk cows, valued at \$2,268,000; 7,000 other cattle, valued at \$211,000; 3,000 sheep, valued at \$24,000, and 12,000 swine, valued at \$217,000. In 1920 there were 2,466 industrial establishments giving employment to 156,012 persons and paying \$168,509,358 in wages and salaries, using raw materials to the value of \$415,989,203 and turning out products to the value of \$747,323,000. Rhode Island is fifth among the States in the production of cotton textiles, third in woollens and sixth in silks and silk goods, and 15th in hosiery and knit goods. Other important manufactures are rubber and elastic goods, jewelry and electrical supplies. Providence, Woonsocket and Pawtucket are the principal industrial centres. The cotton mills of the State have nearly 3,000,000 spindles. The State also supplies quantities of graphite, building stone and lime.

Communications.—There is a large coastwise and foreign traffic, with Providence as the principal port. There are 214 miles of steam railways in the State and 331 miles of electric railways. There are 365 miles of improved State highways, built at a cost of \$6,872,596.80. Newport is one of the most famous resorts in the East and has been socially prominent for nearly two generations.

Government.—The State executive is a Governor, who is elected for two years and receives a salary of \$8,000. The official name of the State is the State of Rhode Island and Providence Plantations. The legislative power is vested in the General Assembly, composed of a Senate of 39 members and a House of Representatives of 100 members. The State sends two Senators and 3 Representatives to the Federal Congress. It is subdivided into five counties and 39 cities and towns.

Legal Holidays.—1 January; 22 February; Arbor Day (second Friday in May); Memorial Day; 4 July; First Monday in September; 12 October; General Election Day; 11 November (Armistice Day); Thanksgiving Day, and 25 December.

Charities and Corrections.—The principal State institutions with the number of inmates in 1922 were: State Hospital for Mental Diseases, 1402; State Prison and Providence County Jail, prison 360, jail 150, total 510; State Infirmary, 617; State Workhouse and House of Correction, 145; Sockanosset School for Boys, 189; Oaklawn School for Girls, 45; State Home and School, 148, and Exeter School for Feeble Minded, 369.

State Officials.—The State officials for 1922 were: Governor, Emery J. San Souci; Lieutenant-Governor, Harold J. Gross; Secretary of State, J. Fred Parker; Attorney-General, Herbert A. Rice; Auditor, Philip H. Wilbour; Treasurer, Richard W. Jennings; and Commissioner of Education, Walter E. Ranger. The State officials in 1923 are: Governor, William S. Flynn; Lieutenant-Governor, Felix A. Toupin; Secretary of State, J. Fred Parker; Attorney-General, Herbert L. Carpenter; Auditor,

Philip W. Wilbour; Treasurer, Adolphus C. Knowles; and Superintendent of Education, Walter E. Ranger.

Judiciary.—Members of Supreme Court: Chief Justice, William H. Sweetland; Associate Justices, Walter B. Vincent, Charles F. Stearns, Elmer J. Rathbun and John W. Sweeney.

RHODE ISLAND STATE COLLEGE, a co-educational institution, founded in 1892 and located at Kingston, R. I. In 1922-23 it had a faculty of 39 members, 380 students, property valued at \$950,000 and an income of \$350,000. Howard Edwards, LL.D., is president.

RHODES SCHOLARSHIPS, the system of scholarships founded by the will of Cecil John Rhodes, which provided in perpetuity for the support at Oxford University, for a term of three years each, of selected scholars from the British Colonies, the United States and Germany.

Thirty-two Rhodes scholars are appointed from the United States each year. A scholarship is tenable for three years and carries with it a stipend of £350 a year. The selection is made on the three-fold basis of (1) character and personality, (2) scholastic ability, and (3) physical vigor whether shown by participation in outdoor sports or in other ways. The 32 appointments from the United States for 1922 were announced 4 Dec. 1922 by Frank Aydelotte, President of Swarthmore College and American Secretary to the Rhodes Trustees.

With regard to the scholarships for the academic year 1921-22 the following statement was issued by the Rhodes Trust: "During the year 72 Rhodes Scholars took up their scholarships for the first time. The number of scholars actually in residence for either the whole or some part of the academic year 1921-22 was 300, namely, 156 from the British Empire and 144 from the United States of America.

There were also in residence for one or more terms nine ex-scholars. In the course of the year 87 scholars either completed the term of the scholarship or went out of residence without completing it. The academic year 1922-23 starts with 262 Rhodes scholars in residence. In addition, there will be in residence seven ex-scholars.

Sir George Parkin, the first organizing secretary of the Rhodes scholarships, died in London on 25 June, to the deep regret of the trustees and of successive generations of Rhodes scholars. The deaths of the following Rhodes scholars have also been reported during the year: W. I. Perrott, Rondebosch, 1906; McD. K. McLean, Texas, 1910. Mr. Perrott, who was a certified accountant in Cape Town, died in June this year. Mr. McLean, who was a professional medical practitioner, had been fighting tuberculosis for some years. He died in Ashville, North Carolina, in September.

The following academic distinctions at Oxford were gained: F. C. Flint (Oregon, 1919), Chancellor's Prize for an English Essay; J. F. Mills (Jamaica, 1919), Theodore Williams Scholarship in Pathology; J. A. Weir (Saskatchewan, 1914), Scholarship for the Promotion of Legal Studies; H. L. Bröse (South Australia, 1913), Lecturer for the Wykeham

Professor of Physics in Trinity Term; W. M. Jones (New Zealand), Wykeham Professor of Physics; A. O. Ponder (New Zealand, 1917), Lecturer in Chemistry at Balliol College; T. S. Wilder (U. S. A., 1919), Demonstrator for the Professor of Pharmacology in Hilary Term; C. A. W. Manning (Rondebosch, 1914), Senior Hulme Scholarship at Brasenose College; R. P. Hamilton (U. S. A., 1919), Boulter Law Exhibition at Christ Church (halved); T. K. Penniman (Vermont, 1917), Commons' Exhibition in Literae Humaniores at Trinity College; R. M. Carson (Michigan, 1918), President of the Oxford Union Society for the Summer Term.

During the year 91 scholars proceeded to degrees for which they were qualified; and 32 scholars were admitted to read for advanced degrees, as follows: Ph.D., 8; B.Sc., 5; B.Litt., 19. In various branches of athletics 23 scholars represented Oxford against Cambridge. Notice was received during the year of 17 books published by ten Rhodes scholars.

Appointments to the 1924 scholarships will be made during the year 1923, and the scholars then elected will enter into residence in October 1924. The value of the scholarship has been increased for the present by the addition of an annual bonus of £50. Even with this addition, however, the scholarship is not sufficient to cover the expenses of a full year, including vacations, and the holder of a scholarship must be prepared to supplement it by about £50 a year."

RHODESIA, a British South African possession bounded north by the Congo Free State, east by Portuguese territory and the British Central Africa Protectorate, south by Bechuanaland and the Transvaal and west by the Congo State, Portuguese West Africa and Bechuanaland. Its total area is 440,000 square miles and in 1921 the population included 33,621 Europeans, 845,593 natives and 3,247 colored, Asiatics, etc. The Zambesi River divides the region into two parts; Southern and Northern Rhodesia. Southern Rhodesia includes Matabeleland and Mashonaland, has an area of 149,000 square miles and its capital at Salisbury. Northern Rhodesia has an area of 291,000 square miles and is divided in two parts Northeastern and Northwestern Rhodesia, the capital, of the former at Fort Jameson and that of the latter at Lialui. Rhodesia has 2,468 miles of railways. There are separate schools for Europeans and for natives. The European pupils number 5,149 in 77 public, 4 aided and 28 private schools.

The mineral activities of the country are very diversified in character, and the output is steadily increasing in value, the gold industry being by far the most profitable. The grand total value of mineral production up to the end of 1921 was nearly £61,000,000, the most important contributors being the following:

Gold.....	£51,501,615
Chrome iron.....	2,301,521
Asbestos.....	2,187,163
Copper.....	2,094,661
Coal (sales).....	2,094,016

Other minerals produced include diamonds, silver, lead, tin and mica. The average annual

value of the gold output for the last six years is £3,136,045, the figures for 1921 being £3,217,274. Upward of 36,000 natives are now employed in the mines.

The most important exports of the country, other than minerals already referred to, are the products of agricultural and pastoral pursuits, and include maize and maize meal, kaffir corn, tobacco, fruit, slaughtered cattle, hides and skins, etc. The pastoral industries of Rhodesia are very valuable assets, showing considerable expansion in recent years.

The following table shows the total value of the imports and exports of Southern Rhodesia for the last five years:

	Imports	Exports
1917.....	£2,515,243	£4,832,488
1918.....	3,021,579	4,205,438
1919.....	3,254,462	4,473,231
1920.....	5,262,318	5,752,858
1921.....	5,243,123	4,815,155

Imports from and exports to the Union during 1921 were valued at £1,049,859 and £447,725 respectively so that the total volume of trade between Southern Rhodesia and the Union amounted to £1,527,584, about 15.18 per cent of the entire trade of the former.

Until 1922 Rhodesia constituted a British Protectorate under the administration of the British South Africa Company, whose charter dated from 1889. In 1922 the inhabitants were called on to decide by referendum as to the future constitutional status of their country, alternative proposals being a system of responsible government or the entry into the Union of South Africa as the fifth province of that union. Results of the referendum showed a majority of 2,785 in favor of responsible government and against inclusion in the Union of South Africa. Preparations were made at once for the annexation of Rhodesia to the British Dominions by the appointment of a governor and the issuance of letters-patent granting a self-governing constitution.

RICE. The United States in 1922, according to the final report of the Department of Agriculture, produced 41,965,000 bushels of rice, valued, according to the 1 December prices, at \$39,178,000, as compared with 37,612,000 bushels valued at \$35,802,000 produced in 1921, and 52,035,000 bushels, valued at \$62,946,000, produced in 1920. The acreage for the three years was 1,055,000 in 1922, 921,000 in 1921 and 1,335,000 in 1920. Louisiana led in production in 1922 with a total yield of 19,980,000 bushels. Production in bushels in other States was: California, 8,260,000; Arkansas, 7,392,000; Texas, 5,959,000; South Carolina, 208,000; Florida, 75,000; Georgia, 72,000; Mississippi, 19,000.

RICHMOND, University of, a Baptist educational institution, founded in 1832 and located at Richmond, Va. In 1922-23 it had a faculty of 46 members, 816 students with 163 additional in summer school, property valued at \$3,450,000 and an income of \$230,000. Frederick William Boatwright, LL.D., is president.

RICKETS. Medical opinion on this subject has been evolving rapidly. It used to be as-

sumed that the faulty growth of the bones in rickets was the result of lime salts, which is associated with soft-water supplies. This theory was found not to be in accordance with the facts, and it was then supposed that the lack of lime salts and phosphates was due to errors in diet. Careful experiments, however, showed that this theory also was untenable. With the discovery of vitamins or accessory food factors it was recently held that rickets could be classified with scurvy and beri-beri as a deficiency disease due to the absence of the fat soluble vitamin from the diet. Professor Mellanby, in particular, demonstrated that rickets could be produced in growing animals by a diet deficient in this essential element, and that healing took place rapidly when cod liver oil or some other food rich in the vitamin was added to the food.

More recently it has been suggested that the essential factors are not dietetic, but that the production of rickets depends on want of exercise and fresh air. Finally, it has been held by Hess and other workers that the actinic or ultra-violet rays of light control the development of bone, that darkness can determine the production of rickets, and that either sunshine or artificially produced ultra-violet rays can prevent or cure the condition.

In reviewing these various theories before the Diseases of Children section of the British Medical Association Congress Dr. Findlay of the Glasgow Royal Hospital for Sick Children, said that the broad fact remains that rickets in Great Britain and in America is a disease of the poor, although it has been shown by Dr. Hutchinson that in certain parts of India the reverse is the case, since the children of the wealthy, owing to the purdah system, are kept in close, dark dwellings. Dr. Findlay said that in spite of experimental work which appeared to confirm the effects of sunlight, there were difficulties in accepting it as the determining factor. At his hospital better results were obtained by keeping the children in the city and carrying out massage than by sending them to their country branch, where there was undoubtedly a greater abundance of sunlight. The complete absence of rickets in Iceland, where for four months in the year the sun never rises, is also against the theory. The fact, too, that rickets is as prevalent in Vienna as it is in Glasgow, though the former city has double the number of hours of sunshine per annum, led him to the opinion that the absence of sunshine, by producing lethargy, reduced the amount of exercise, and was thus a contributory factor in the causation of the disease.

He concluded that the causation of rickets is associated with confinement, and that whether it was due to want of fresh air, lack of exercise, or the absence of the sun's rays, or because bad hygiene in general favors the development of some virus, it is at present impossible to say. Professor Mellanby, who is universally regarded as the leading British authority on vitamins and dietetics generally, explained that his attitude in this matter had been somewhat misrepresented. He had never written of rickets as a disease uninfluenced by environment. He maintained, however, that

diet was the most important factor, and that environment apart from diet was of secondary importance. Following a somewhat technical explanation of the result of his recent researches on diet, he pointed out that normally the direct action of sunlight was impeded by the effect of clothes and the practice of shading the face of the child, the only exposed part of the skin, from direct sunlight. Even the passage of light through window glass cut off the actinic rays so that the effect of sunlight on a child during its first year must be very small. If it were argued that this was the cause of the prevalence of rickets, how were we to explain the absence of the disease among the Eskimos? His conclusions were as follows:

That when a child is well fed the presence or absence of sunlight makes no difference as far as rickets is concerned.

That in the case of a child fed on a mediocre or borderline diet, exposure of the skin to sunlight will probably prevent rickets; and

That in the case of badly-fed children sunlight will not prevent rickets, but may ameliorate the symptoms to some extent.

Dr. Hutchinson of Glasgow, observed that diet was the only factor the physician could control, and experience showed that by proper regulation of this he could cure the condition. In February announcement was made that cod liver oil is a cure for rickets, the bone disease that has caused deformities of children for ages, according to Dr. E. A. Park and Dr. John Howland of the Johns Hopkins Hospital staff, who have made exhaustive X-ray studies over a long period at the Harriet Lane Home and in the department of pediatrics. Dr. Mary S. Smith made the X-ray records upon which this final and emphatic conclusion has been based.

RIFLE-SHOOTING. The season of 1922 was one of the greatest in the history of this sport from the standpoint of American marksmanship. Not only did the United States teams win the international team and individual championships with the .30-calibre rifle at Milan, Italy, but in the Allied armies' rifle championships at Coblenz the Americans defeated the British, French and Belgians, and, in the international small bore, .22 calibre event, America defeated Great Britain.

The Swiss gave America its toughest opposition in the international matches, the United States shooters winning by 12 points, 5,132 to 5,120. Walter Stokes of Washington, D. C., won the individual championship from Lynhard of Switzerland by two points, 1,067 to 1,065. For 20 years the Swiss dominated the .30 calibre championships until the United States entered in 1920. In 1923 these matches will be shot in this country and tryouts for the American team will be held in no less than a dozen cities.

In the Allied armies' match the British shooters scored 400 points to 510 for America. The others were nowhere. In the small-bore championships the United States won for the sixth time in succession. Rifle shooting has attained great popularity. Even with the restricted number of entries at Camp Perry,

Ohio, where the national matches were held 2-28 Sept. 1922, 800,000 rounds of .30-calibre ammunition were used as well as 96,000 shells.

RIO GRANDE COLLEGE, a Baptist co-educational institution, founded in 1876 and located at Rio Grande, Ohio. It has a faculty of 13 members and in 1921-22 had a student enrollment of 517. The institution's property is valued at \$200,000 and its income is \$25,000. Simeon H. Bing, A.M., is president.

RIPON COLLEGE, a non-sectarian co-educational institution, founded in 1851 and located at Ripon, Wis. In 1922-23 it had a faculty of 29 members, 415 students, property valued at \$481,066.77 and an income of \$197,493.28. Silas Evans, D.D., LL.D., is president.

RIVERS AND HARBORS, Federal Appropriation for the improvement of. Under the War Department Appropriation Act of 30 June 1922, the Congress of the United States appropriated the lump sum of \$42,815,661 for the maintenance and improvement of existing river and harbor works during the fiscal year 1922-23. In addition \$325,000 was appropriated for examinations, surveys and contingencies; \$6,670,000 for Mississippi River flood control; \$400,000 for Sacramento River flood control; \$7,500,000 for Dam No. 2 on the Tennessee River at Muscle Shoals; \$15,000 for the expenses of the California Debris Commission, and \$109,260 for prevention of obstructive and injurious deposits within the harbor and adjacent waters of New York City. Under the law, the Chief of Engineers of the United States Army allots out of the general or lump-sum appropriation the amount to be expended upon each particular improvement. Holding in reserve approximately \$6,000,000 for contingencies, the chief of engineers allotted the 1922-23 appropriation as follows:

ALLOTMENTS FOR RIVERS AND HARBORS UNDER ACT OF 30 JUNE 1922.

Boston Harbor, Mass.	\$40,000
Pollock Rip Shoals, Nantucket Sound, Mass.	115,000
Pawtucket (Seekonk) River, R. I.	90,000
Connecticut River below Hartford, Conn.	45,000
New Haven Harbor, Conn.	21,000
Milford Harbor, Conn.	9,000
Bridgeport Harbor, Conn.	70,000
Port Chester Harbor, N. Y.	30,000
East Chester Creek, N. Y.	18,000
Westchester Creek, N. Y.	12,000
Mattituck Harbor, N. Y.	10,000
New York Harbor: Ambrose, Main Ship, Bay-side, and Gedney Channels, including Anchorage Channel and Craven Shoal, and channel between Staten Island and Hoffman and Swinburne Islands, N. Y.	350,000
Coney Island Channel, N. Y.	5,000
East River, N. Y.	2,000,000
Newtown Creek, N. Y.	80,000
Hudson River Channel, N. Y.	350,000
Rondout Harbor, N. Y.	2,500
Hudson River, N. Y.	380,000
Plattsburg Harbor, N. Y.	1,000
Narrows of Lake Champlain, N. Y. and Vt.	40,000
Woodbridge Creek, N. J.	6,000
Raritan Bay, N. J.	30,000
Raritan River, N. J.	20,000
Shoal Harbor and Compton Creek, N. J.	15,000
Shrewsbury River, N. J.	10,000
Delaware River, between Philadelphia, Pa., and Trenton, N. J.	25,000
Delaware River, Pa., N. J., and Del., Philadelphia, Pa., to the sea.	3,000,000
Delaware River at Camden, N. J.	100,000
Ice Harbor at Marcus Hook, Pa.	1,000
Abasco Inlet, N. J.	50,000
Tuckerton Creek, N. J.	10,000

Wilmington Harbor, Del.	\$125,000
Inland Waterway, from Delaware River to Chesapeake Bay, Del. and Md.	2,500,000
Smyrna River, Del.	53,000
St. Jones River, Del.	30,000
Broadkill River, Del.	15,000
Waterway on the coast of Virginia.	4,000
Cold Spring Inlet, N. J.	50,000
Baltimore Harbor and Channels, Md.	300,000
Potomac River at Washington, D. C.	33,000
Rappahannock River, Va.	21,600
Mattaponi River, Va.	3,350
Pamunkey River, Va.	3,600
Thimble Shoals Channel, Va.	300,000
Appomattox River, Va.	25,000
Pagan River, Va.	25,000
Nansemond River, Va.	20,000
Inland Waterway from Norfolk, Va., to Beaufort Inlet, N. C.	240,000
Norfolk Harbor, Va.	300,000
Scuppernon River, N. C.	15,000
Pamlico and Tar Rivers, N. C.	17,000
Neuse River, N. C.	12,000
Swift Creek, N. C.	800
Contentnea Creek, N. C.	1,600
Trent River, N. C.	2,500
Harbor at Beaufort, N. C.	24,000
Waterway connecting Core Sound and Beaufort Harbor, N. C.	2,500
Inland Waterway, Beaufort to Jacksonville, N. C.	20,000
Cape Fear River at and below Wilmington, N. C.	200,000
Cape Fear River, N. C., above Wilmington.	15,000
Northeast (Cape Fear) River, N. C.	3,000
Black River, N. C.	2,000
Winyah Bay, S. C.	20,000
Santee River and Estherville-Minim Creek, Canal, S. C.	8,000
Waterway from Charleston to Winyah Bay, S. C.	10,000
Savannah Harbor, Ga.	900,000
Savannah River below Augusta, Ga.	10,000
Savannah River at Augusta, Ga.	2,000
Savannah River above Augusta, Ga.	2,000
Waterway between Beaufort, S. C., and St. Johns River, Fla.	55,000
Sapelo Harbor, Ga.	12,000
Darien Harbor, Ga.	8,000
Fancy Bluff Creek, Ga.	1,200
Satilla River, Ga.	2,000
St. Marys River, Ga. and Fla.	12,000
Altamaha River, Ga.	8,000
Oconee River, Ga.	19,000
Ocmulgee River, Ga.	15,000
Brunswick Harbor, Ga.	200,000
Fernandina Harbor, Fla., and Cumberland Sound, Ga. and Fla.	6,000
St. Johns River, Fla., Jacksonville to the Ocean.	450,000
St. Johns River, Fla., Jacksonville to Palatka.	30,000
St. Johns River, Fla., Palatka to Lake Harney.	50,000
Indian River, Fla.	10,000
Miami Harbor (Biscayne Bay), Fla.	40,000
Key West Harbor, Fla.	50,000
Kissimmee River, Fla.	10,000
Caloosahatchee River, Fla.	25,500
Clearwater Harbor and Boca Ceiga Bay, Fla.	14,000
Anclote River, Fla.	5,000
Tampa and Hillsboro Bays, Fla.	250,000
Removing the water hyacinth from navigable waters in the State of Florida.	10,000
Apalachicola Bay, Fla.	15,000
Apalachicola River, Fla., the cut-off, Lee Slough, and lower Chipola River.	5,000
Upper Chipola River, Fla., from Marianna to its mouth.	10,000
Flint River, Ga.	10,000
Chattahoochee River, Ga., and Ala.	122,000
Channel from Apalachicola River to St. Andrews Bay, Fla.	47,000
St. Andrews Bay, Fla.	50,000
Choctawhatchee River, Fla. and Ala.	9,000
Narrows in Santa Rosa Sound, Fla.	7,000
Pensacola Harbor, Fla.	20,000
Alabama River, Ala.	75,000
Mobile Harbor, Ala.	300,000
Black Warrior, Warrior, and Tombigbee Rivers, Ala.	52,000
Tombigbee River from mouth to Demopolis (maintenance of channel).	32,700
Tombigbee River from Demopolis, Ala., to Walkers Bridge, Miss.	2,000
Pascagoula Harbor, Miss.	25,000
Gulfport Harbor and Ship Island Pass, Miss.	100,000
Pascagoula River, Miss.	4,000
Biloxi Harbor, Miss.	10,000

RIVERS AND HARBORS

Channel between Mobile Bay and Mississippi Sound, Ala.	\$20,000	Sturgeon Bay and Lake Michigan Ship Canal, Wis.	\$38,000
Southwest Pass, Mississippi River, La.	2,000,000	Algoma Harbor, Wis.	6,500
South Pass Channel, Mississippi River, La. (maintenance).	600,000	Kewaunee Harbor, Wis.	30,000
Bayou Plaquemine, Grand River and Pigeon Bayous, La.	20,000	Two Rivers Harbor, Wis.	5,500
Bayou Grossetete, La.	5,000	Manitowoc Harbor, Wis.	3,500
Bayou Teche, La.	50,000	Sheboygan Harbor, Wis.	14,000
Bayou Queue de Tortue, La.	20,000	Port Washington Harbor, Wis.	6,000
Calcasieu River and Pass, La.	15,000	Milwaukee Harbor, Wis.	155,500
Removing the water hyacinth, La. (including Mobile District).	30,000	Racine Harbor, Wis.	150,000
Galveston Harbor, Tex.	90,000	Kenosha Harbor, Wis.	37,000
Galveston Channel, Tex.	150,000	Waukegan Harbor, Ill.	123,000
Channel from Galveston Harbor to Texas City, Tex.	100,000	St. Joseph Harbor, Mich.	10,500
Channel to Port Bolivar, Tex.	20,000	South Haven Harbor, Mich.	27,500
Houston Ship Channel, Tex.	750,000	Holland Harbor, Mich.	47,500
Double Bayou, Tex.	7,000	Grand Haven Harbor, Mich.	144,000
Anahuac Channel, Tex.	5,000	Grand River, Mich.	4,500
Mouth of Trinity River, Tex.	1,000	Muskegon Harbor, Mich.	65,000
Turtle Bayou, Tex.	10,000	Manistee Harbor, Mich.	12,000
Clear Creek, Tex.	4,000	Frankfort Harbor, Mich.	24,000
Dickinson Bayou, Tex.	5,000	Charlevoix Harbor, Mich.	1,000
Channel from Aransas Pass to Corpus Christi, Tex.	10,000	Chicago Harbor, Ill.	40,000
Freeport Harbor, Tex.	50,000	Chicago River, Ill.	20,000
Port Aransas, Tex.	200,000	Calumet Harbor, Ill.	100,000
Harbor at Sabine Pass and Port Arthur Canal, Tex.	150,000	Calumet River, Ill. and Ind.	40,000
Sabine-Neches Canal, including Sabine River to Orange and Neches River to Beaumont, Tex.	150,000	Indiana Harbor, Ind.	200,000
Johnsons Bayou, La.	3,000	Michigana City Harbor, Ind.	10,000
Cypress Bayou and waterway between Jefferson, Tex., and Shreveport, La.	61,000	Illinois River, Ill.	140,000
Red River below Fulton, Ark.	15,000	St. Marys River, Mich.	557,000
Ouachita and Black Rivers, Ark. and La.	345,000	St. Clair River, Mich.	80,000
Tensas River and Bayou Macon, La.	5,000	Detroit River, Mich.	1,000,000
Boeuf River, La.	5,000	Alpena Harbor, Mich.	5,000
Bayou Bartholomew, La. and Ark.	2,500	Black River, Mich.	5,000
Saline River, Ark.	2,000	Rouge River, Mich.	103,000
Bayous D'Arbonne and Corney, La.	2,000	Toledo Harbor, Ohio.	50,000
Yazoo River, Miss.	16,000	Port Clinton Harbor, Ohio.	1,000
Tallahatchie and Coldwater Rivers, Miss.	10,000	Sandusky Harbor, Ohio.	60,000
Big Sunflower River, Miss.	12,000	Huron Harbor, Ohio.	18,000
Arkansas River, Ark. and Okla.	28,000	Cleveland Harbor, Ohio.	5,000
White River, Ark.	23,000	Conneaut Harbor, Ohio.	10,000
Black River, Ark. and Mo.	17,000	Erie Harbor, Pa.	42,000
Current River, Ark. and Mo.	8,000	Dunkirk Harbor, N. Y.	50,000
St. Francis and L'Anguille Rivers and Blackfish Bayou, Ark.	5,000	Buffalo Harbor, N. Y.	500,000
White River at Augusta Narrows	14,000	Black Rock Channel and Tonawanda Harbor, N. Y.	40,000
Mississippi River between Ohio and Missouri Rivers	915,000	Charlotte Harbor, N. Y.	15,500
Removing snags and wrecks from the Mississippi below the mouth of the Missouri River, and from the Old and Atchafalaya Rivers.	25,000	Great Sodus Bay Harbor, N. Y.	12,000
Mississippi River between Missouri River and Minneapolis, Minn.	1,000,000	Little Sodus Bay Harbor, N. Y.	12,000
Mississippi and Leech Rivers, Minn.	25,000	Oswego Harbor, N. Y.	23,500
Missouri River, Kansas City to Mouth.	100,000	Cape Vincent Harbor, N. Y.	1,500
Missouri River, Kansas City, Mo., to Sioux City, Iowa.	25,000	Ogdensburg Harbor, N. Y.	4,000
Missouri River, Sioux City, Iowa, to Fort Benton, Mont.	20,000	Los Angeles Harbor, Calif.	500,000
Osage River, Mo.	15,000	Harbor at San Francisco, Calif.	10,000
Gasconade River, Mo.	4,000	Oakland Harbor, Calif.	100,000
Cumberland River, Tenn. and Ky., below Nashville.	425,000	Richmond Harbor, Calif.	100,000
Tennessee River below Riverton, Ala.	160,000	Petaluma Creek, Calif.	50,000
Tennessee River, Chattanooga to Riverton, except Browns Island to Florence.	150,000	Humboldt Harbor and Bay, Calif.	250,000
Tennessee River above Chattanooga.	20,000	San Joaquin River, Calif.	33,000
Construction of Locks and Dams on the Ohio River.	5,000,000	Stockton and Mormon Channels (Diverting Canal), Calif.	10,000
Ohio River (General open-channel work).	435,000	Mokelumne River, Calif.	800
Allegheny River, Pa., open-channel work.	5,000	Sacramento River, Calif.	95,000
Harbor at Grand Marais, Minn.	6,000	Treatment of the Yuba River debris situation — restraining barriers.	30,000
Harbor at Agate Bay, Minn.	3,000	Coos Bay, Oreg.	150,000
Harbor at Duluth, Minn., and Superior, Wis.	68,500	Coos River, Oreg.	3,000
Port Wing Harbor, Wis.	2,500	Yaquina Bay and Harbor, Oreg.	300,000
Harbor at Ashland, Wis.	12,000	Columbia River and tributaries above Celilo Falls to the mouth of Snake River, Oreg. and Wash.	12,500
Harbor at Ontonagon, Mich.	14,000	Snake River, Oreg., Wash. and Idaho.	10,000
Keweenaw Waterway, Mich.	125,500	Clatskanie River, Oreg.	6,200
Harbor of Refuge, Marquette Bay, Mich.	2,400	Willamette River above Portland, and Yamhill River, Oreg.	27,300
Harbor at Marquette, Mich.	90,000	Lewis River, Wash.	17,700
Harbor of Refuge at Grand Marais, Mich.	20,000	Cowlitz River, Wash.	11,000
Warroad Harbor and Warroad River, Minn.	20,600	Skamokawa Creek, Wash.	2,000
Zippel Bay, Lake of the Woods, Minn.	1,000	Grays River, Wash.	2,000
Baudette Harbor and River, Minn.	1,500	Columbia and Lower Willamette Rivers, below Vancouver, Wash., and Portland, Oreg.	850,000
Manistique Harbor, Mich.	5,000	Willapa River and Harbor, Wash.	265,000
Menominee Harbor and River, Mich. and Wis.	42,000	Grays Harbor and bar entrance, Wash.	36,000
Green Bay Harbor, Wis.	91,000	Puget Sound and its tributary waters, Wash.	30,000
Fox River, Wis.	100,000	Waterway connecting Port Townsend Bay and Oak Bay, Wash.	10,000
		Port Gamble Harbor, Wash.	500
		Lake Washington Ship Canal, Wash.	40,000
		Swinomish Slough, Wash.	5,000
		Bellingham Harbor, Wash.	4,000
		San Juan Harbor, P. R.	200,000
			\$35,604,250
		Subsequent Allotments:	
		Nome Harbor, Alaska.	4,000
		St. Jones River, Del.	14,000

The Rivers and Harbors appropriation for 1923-24 totalled \$56,589,000.

ROADS, PUBLIC, United States Bureau of. The Bureau of Public Roads is in the Department of Agriculture. Its most important work is the administration of the Federal aid road work and the construction of roads in the national forests. Its other activities include research in all phases of the design and construction of roads and economic investigations to determine their value and the service they render to the community. Its agricultural engineering branch conducts investigations and disseminates information with regard to the utilization of water for irrigation, the drainage of farm lands, the use of mechanical power on the farm, the water supply and sewerage of farm homes, the design and arrangement of farm buildings and their heating, lighting and ventilation, and other matters connected with agriculture which involve the employment of engineering knowledge.

The Bureau was created in 1893 under the name of the Office of Road Inquiry. Its first activities, which with some enlargement were its only functions until 1916, involved the investigation of the best methods of road design and construction and the dissemination of the results of its investigations by means of published reports and demonstrations in the form of object-lesson roads constructed for local

communities under the supervision of its engineers.

The passage of the Federal-Aid Road Act on 11 July 1916 added to its duties the supervision of Federal-aid road construction and the national forest road work and since that date its major activities have been administrative rather than educational, though the investigational and research work in connection with road-building materials, road design, administration and economics have been continued on an enlarged scale with important results.

The original Federal-aid road legislation provided an appropriation of \$75,000,000. Of this appropriation \$5,000,000, was made available for the fiscal year 1917, \$10,000,000 for the fiscal year 1918, and sums increasing by \$5,000,000 annually for the succeeding fiscal years up to 1921. In 1919 a second appropriation provided \$200,000,000 additional, \$50,000,000 of which was made available for the fiscal year 1919, and \$75,000,000 for each of the fiscal years 1920 and 1921.

The Federal Highway Act, approved 9 Nov. 1921 appropriated \$75,000,000 for the fiscal year 1922; and the Postoffice Appropriation Act for the fiscal year 1923 authorized the appropriation of \$50,000,000 for that year, and \$65,000,000 and \$75,000,000 respectively for the fiscal years 1924 and 1925. Of these amounts authorized only \$25,000,000 has been appropriated for the fiscal year 1923 and the agricultural appropriation

APPROPRIATIONS FOR FEDERAL-AID ROAD CONSTRUCTION.

FISCAL YEAR	By act of 11 July, 1916	By act of 28 Feb. 1919	By act of 9 Nov. 1921	By post office appropriation act for fiscal year 1923	Total
1917.....	\$5,000,000				\$5,000,000
1918.....	10,000,000				10,000,000
1919.....	15,000,000	\$50,000,000			65,000,000
1920.....	20,000,000	75,000,000			95,000,000
1921.....	25,000,000	75,000,000			100,000,000
1922.....			\$75,000,000		75,000,000
1923.....				\$50,000,000	50,000,000
1924.....				\$65,000,000	65,000,000
1925.....				\$75,000,000	75,000,000
1926.....					
Total.....	\$75,000,000	\$200,000,000	\$75,000,000	\$190,000,000	\$540,000,000

¹ \$50,000,000 authorized; \$25,000,000 since appropriated.

² \$65,000,000 authorized; \$29,300,000 since appropriated.

³ Authorized only; none yet appropriated.

APPROPRIATIONS FOR NATIONAL FOREST ROAD CONSTRUCTION.

FISCAL YEAR	By act of 11 July, 1916	By act of 28 Feb. 1919	By act of 9 Nov. 1921	By post office appropriation act for fiscal year 1923	Total
1917.....	\$1,000,000				\$1,000,000
1918.....	1,000,000				1,000,000
1919.....	1,000,000	\$3,000,000			4,000,000
1920.....	1,000,000	3,000,000			4,000,000
1921.....	1,000,000	3,000,000			4,000,000
1922.....	1,000,000		\$5,000,000		6,000,000
1923.....	1,000,000		10,000,000		11,000,000
1924.....	1,000,000			\$6,500,000	7,500,000
1925.....	1,000,000			\$6,500,000	7,500,000
1926.....	1,000,000				1,000,000
Total.....	\$10,000,000	\$9,000,000	\$15,000,000	\$13,000,000	\$47,000,000

¹ \$6,500,000 authorized; \$3,000,000 since appropriated.

² \$6,500,000 authorized; none yet appropriated.

bill, in the 67th Congress carried \$29,300,000 for 1924. None of the \$75,000,000 authorized for the fiscal year 1925 has yet been appropriated. In respect to these authorized amounts, however, though they have not yet been appropriated in full, the United States recognizes a contractual obligation in the whole amount and there is no doubt that the money will be appropriated as needed.

The funds appropriated for each year are apportioned among the States in proportion to their area, population and mileage of rural post roads and star routes, each factor having a weight of one-third.

The various acts referred to also made appropriations for the construction of roads in the national forests and the amounts for each fiscal year appropriated for this purpose and for Federal-aid road construction are shown in the preceding table.

Federal-Aid Road Construction.—The Federal-aid roads are built under the immediate supervision of the 48 State highway departments subject to the approval of the Bureau of Public Roads which acts for the Secretary of Agriculture. The procedure established by the original Federal-Aid Road Act remains unchanged in many respects though some important changes have been introduced by subsequent legislation, especially by the Federal Highway Act of 1921.

The most important change brought about by the Federal Highway Act was the provision for the selection of a connected system of roads upon which all future Federal funds will be expended. The selection of that system, known as the Federal-Aid Highway System is now nearing completion. It will consist of not more than 7 per cent of the total mileage of roads existing in the United States at the time of the passage of the act and will include more than 180,000 miles of the most important roads in the United States. Not more than three-sevenths of the system will be primary roads of interstate importance, the remainder being secondary or inter-county roads.

The selection of the system has been made in the first instance by the State highway departments, and the function of the Bureau is to see that the roads thus selected make the proper connections at State lines so that the system will be continuous for the United States as a whole as well as within each State. Until the various State systems are finally approved the construction of roads is being continued but only such roads as will form part of the system finally selected without reasonable doubt are being approved by the Bureau.

Projects for the improvement of particular parts of the system with Federal aid are initiated by the State highway departments. As the first step the State department submits to the Bureau a formal request for assistance, known as a project statement. This statement describes briefly the particular road to be improved in its relation to other roads, gives approximate information as to the present and probable future traffic and describes, in general terms, the character of improvement contemplated, giving a preliminary estimate of the cost.

The project statement is forwarded to the district engineer in charge of that one of the

12 districts, into which the entire country is divided, who is in charge of the work in the State, and by him is transmitted with his recommendation for approval or disapproval to Washington. The Bureau, guided by the opinion of the district engineer, makes its recommendation to the Secretary of Agriculture, and if he approves the project the State is so notified and it then prepares to submit detailed plans, specifications and estimates for the work. These, when ready, are transmitted to the district engineer and, if he approves them, the State can immediately advertise and let the contract for the work.

Modifications of the plans may be required after they have been forwarded to the Bureau, but it is not necessary to delay the preliminary construction operations after the approval of the district engineer has been secured. When the detailed plans have been approved by the Bureau the Secretary of Agriculture enters into a formal agreement with the State highway department by which the government undertakes to pay to the State on satisfactory completion of the work a specific amount of Federal money which in most States may not exceed 50 per cent of the cost of the work. In the States, 5 per cent or more of whose area is unappropriated public land under the jurisdiction of the United States, the participation of the government in the payment for individual construction projects may be greater than 50 per cent by one-half the percentage of such land in the State.

On roads built with the funds appropriated for the fiscal year 1923 the maximum Federal payment that may be made is \$16,250 per mile exclusive of payments made for bridges more than 20 feet in span. To roads constructed with funds appropriated for the fiscal year 1924 and subsequent appropriations the limit of allotment will be reduced to \$15,000 a mile. This limit was at first \$10,000. The act of 28 Feb. 1919 made it \$20,000 and the reductions for 1923 and subsequent years were made by the Postoffice Appropriation Act for the fiscal year 1923.

The only requirement affecting the character of the roads built is that they shall be substantial and suitable for the traffic they will be called upon to carry. The Bureau has approved all types of construction, after assuring itself, in each case, that the type proposed was adequate to meet the traffic requirements.

Frequent inspections of the construction work are made by engineers of the Bureau and Federal payments are made only for work which meets with the Bureau's approval. After completion the Bureau's engineers make periodic inspections to make sure that the roads are being maintained by the State as required by law.

In case the condition of a completed road is found at any time to be unsatisfactory the Bureau notifies the State highway department that the road is in need of repair. If within 90 days the State has not repaired the road the Bureau is required by law to repair it with its own forces or by contract under its direct supervision, charging the cost of such work to any balance of Federal money apportioned to the State. The Secretary of Agriculture, moreover, will withhold all further payments of aid to the State until the amount paid for the repair is refunded to the government, and when such refund is

made it is returned to the general fund and reapportioned among all the States, so that the offending State loses all but its pro-rata part. It has not yet been necessary for the Bureau to repair any road in accordance with this provision of law.

Up to the end of the calendar year 1922, 18,913 miles of Federal-Aid road had been completed. Federal payments to these roads, the total cost of which was \$328,358,884 amounted to \$139,227,438. At the end of the year there were 19,187 miles additional still under construction and estimated as 70 per cent complete. The estimated total cost of these roads was \$336,181,265 and the total allotment of Federal money for them was \$149,663,763. More than 11,400 miles of the completed roads were brought to completion during 1922.

Distribution of Surplus War Material.

In addition to the monetary Federal aid it is also a function of the Bureau to distribute aid for road construction in the form of surplus war materials of various kinds suitable for the purpose. Lists of materials declared surplus by the War Department are received from the War Department and copies are forwarded to the State highway departments so that they can requisition what they need. From the replies received from the State highway departments the final distribution is made. No material is sent to any State except upon request and so far as possible it is the endeavor of the Bureau to supply the wants of the States but its ability to do so is limited to a certain extent by the provision of law which requires that the distribution be made upon a value basis in accordance with the same factors which are employed in apportioning the monetary Federal aid.

By 1 July 1922 surplus war materials valued at over \$139,000,000 had been distributed to the States. Most important among the articles distributed were motor vehicles. Approximately 30,000 motor vehicles including motor trucks and automobiles had been distributed up to the above date, and, in addition, the list of articles distributed included a wide range of mechanical equipment, tractors, wagons, explosives, large quantities of steel, wire, spare parts for automobiles, pipe and other materials.

National Forest Road Construction.—The work of the Bureau on national forest roads does not consist of examining and supervising the engineering work of others but involves the performance of the highway engineering work itself. All roads in the national forests are classified as forest highways or forest development roads. The former include all roads which are necessary sections or extensions of the Federal-Aid System or which are of primary importance to counties or communities. The forest development roads include those primarily for the protection, administration and utilization of the forests. The roads are also classified as major roads, including all forest highways except those which do not require the services of a highway engineer or which cost less than \$2,000 per mile and all forest development roads which cost more than \$5,000 per mile; and minor roads comprising all other forest roads. Improvement of the minor roads is in the hands of the Forest Service, another bureau of the De-

partment of Agriculture. Most of the work on major projects is performed by the Bureau of Public Roads either with or without the co-operation of others.

In the selection of forest highways the Bureau co-operates with the Forest Service and the State highway departments in a manner prescribed by regulations issued by the Secretary of Agriculture. The construction work on all major projects is directly under the Bureau, but no work is considered complete until it has been approved by the State highway department, and as to certain matters by the Forest Service. Most of the forest road work is in the Western States and much of the detail of administration is handled by a deputy chief engineer and staff with headquarters at San Francisco. Up to the end of the calendar year 1922, 1,487 miles of forest roads had been completed at a cost of \$13,181,786; and on 31 December, 675 miles additional were under construction.

Highway Research Activities.—The highway research activities have been developed along two principal lines, the physical and the economic. The physical researches include investigations to determine the effect of the abrasive and impact forces of traffic on various types of road surface, the design of surfaces to withstand such forces, the study of the characteristics of subgrade soils and the effect of moisture on their bearing power, the strength and wearing qualities of various highway materials, studies of bridge stresses and bridge design and numerous other less important physical phases of the road construction problem. Physical investigations are conducted on a large scale at the experimental farm of the Department of Agriculture at Arlington, Va., and experiments are also conducted in co-operation with universities, State highway departments and other agencies.

The economic researches include the study of the laws of traffic distribution, the best methods of administering and financing road construction and the benefits resulting in the form of reduced operating costs of vehicles and increased production and land value as a result of the improvement of the roads.

Agricultural Engineering Activities.—The investigational and extension work in agricultural engineering includes a wide variety of work described by the following headings: (a) Methods of utilizing water for irrigation; (b) Pumping for irrigation; (c) Irrigation appliances and equipment; (d) The flow of water in ditches and pipes of various materials; (e) The measurement of water for irrigation; (f) Customs, laws and regulations relating to irrigation; (g) The drainage of irrigated lands; (h) The construction, operation and maintenance of land drainage improvements; (i) The drainage of various soils; (j) The organization, financing and regulation of drainage districts; (k) Gully-ing and erosion and their prevention; (l) The drainage of tidal marshes and swamp lands; (m) Farm domestic water supply and sewage disposal; (n) The utilization of mechanical farm equipment; (o) The construction and arrangement of farm buildings; (p) The lighting, heating and ventilation of farm homes and structures.

THOMAS H. MACDONALD.

Chief, Bureau of Public Roads.

ROANOKE COLLEGE, a Lutheran educational institution for men, founded in 1853 and located at Salem, Va. In 1922-23 it had a faculty of 22 members, 200 students, property valued at \$700,000 and an income of \$70,000. Charles J. Smith, D.D., is president.

ROBINSON, John Edward, American Methodist Episcopal bishop: b. County Galway, Ireland, 12 Feb. 1849; d. Bangalore, India, 16 Feb. 1922. He came to the United States in 1865; studied at Drew Theological Seminary in 1873, and was ordained to the Methodist Episcopal ministry in 1874. Shortly thereafter he went to India and Burmah as a missionary, serving in the Secunderabad Circuit, 1875-76; Richmondtown, Bangalore, 1877-79; Rangoon, Burmah, 1880-84. He was presiding elder of the Burmah district, 1885-86; Bombay district, 1887-96; Asansole district, 1896-1900; Calcutta district, 1900-04. In May 1904 he was elected missionary bishop of Southern Asia. He edited the *Burmah Evangelist*, 1884-87; the *Indian Witness*, 1896-1904. He was a member of the General Conferences of 1888, 1892 and 1904. He wrote 'Rise and Progress of Methodism' (1889); 'Apostolic Succession' (1890); 'Brief History of Methodism' (translated into various Indian languages, 1915). He retired in 1920. Albion College conferred the degree of D.D. upon him.

ROCHESTER, University of, a non-sectarian co-educational institution founded in 1850 and located at Rochester, N. Y. In 1922-23 it had a faculty of 69 members, an enrollment of 707 students in the extension division, 753 in the College of Arts and Science, about 200 in the Eastman School of Music, and about 1,200 in the preparatory and special departments. The institution's property was valued at \$16,226,427.14 and its income for 1921-22 was as follows: College of Arts and Science, \$376,000; Eastman School of Music, \$270,000; School of Medicine and Dentistry, \$550,000; total income, \$1,196,000. Rush Rhees, D.D., LL.D., is president.

ROCKEFELLER FOUNDATION. An institution chartered by the State of New York in 1913, "to promote the well-being of mankind throughout the world." It devotes its resources almost entirely to public health and medical education. Its principal funds on 1 Jan. 1923 amounted to \$174,000,000. Both the income and principal are available for appropriation. The annual income is approximately \$8,700,000. The Foundation's activities are carried on chiefly through three departmental agencies of its own creation—the International Health Board, the China Medical Board, and the Division of Medical Education.

One of the earliest activities of the International Health Board was work for the relief and control of hookworm disease, initiated in the Southern States in 1910, by the Rockefeller Sanitary Commission, taken over by the Board in 1915, and gradually extended to foreign countries. In 1922 hookworm work was conducted in co-operation with 11 Southern States and 22 foreign governments. Resurveys in 65 counties in the Southern States show a reduc-

tion in the rate of infection in school children from 54.8 per cent when control work began, to 28.7 per cent at the present time. In many communities the rate of infection has been reduced more than 90 per cent.

The yellow fever work of the year centered in Mexico, where the Board co-operated with the government in applying control measures which had proved effective in earlier campaigns in Ecuador, Peru and several Central American countries. Larvicidal fish are relied upon principally to prevent the breeding of yellow fever mosquitoes. Continued use of the recently developed vaccine and serum indicates their efficiency when used under proper conditions.

Demonstrations in malaria control carried on in 38 towns in nine States proved to these communities that malaria can be practically eliminated at a moderate cost. Larva-consuming fish, oiling and drainage are the principal means employed to prevent mosquito breeding. Experimental field studies in the efficiency of other methods of control were continued in the United States. In Nicaragua, Porto Rico, Brazil, the Philippine Islands, and Palestine field studies were conducted in the problem of malaria control as affected by tropical and other conditions.

Largely as a result of the hookworm campaigns in the Southern States, full-time health service for small towns and rural communities has been developing rapidly with the county as the unit. Over 200 counties, chiefly in the South, now employ full-time health officers. During 1922 the International Health Board co-operated in the establishment or operation of 140 county health units in 19 States.

The International Health Board entered into a co-operative arrangement with the health section of the League of Nations whereby it will provide a sum not to exceed \$32,840 a year for a period of five years to maintain an international epidemiological intelligence service. It will also provide a sum not to exceed \$60,080 a year for three years to put into effect a scheme for the international exchange of health personnel under the auspices of the League. Other public health activities of the Board include: financial co-operation in a demonstration of rural health administration in the province of New Brunswick, Canada; temporary financial aid, with advice and counsel, in establishing a public health laboratory service in several American States and Central American countries and a department of health in Czechoslovakia; the lending of experts as consultants to aid in reorganizing the public health system of the Philippine Islands, to establish an industrial hygiene system for Australia, to develop a public health nursing service in Brazil, and to organize a sanitary engineering division in a state health department.

Continuing its program of aid in the training of public health personnel, the International Health Board in 1922 agreed to give \$2,000,000 toward the building and equipment of a school of hygiene in London and \$212,000 for the building of an institute of hygiene in Warsaw. Full responsibility for financing the Johns Hopkins School of Hygiene and Public Health, which since its organization in 1918 had been supported by annual appropriations from the Foundation.

was transferred to the university authorities with a gift of \$6,000,000 for buildings and endowment. Payments were continued on the pledge of \$1,660,000 to Harvard University for its school of public health. Contributions were also made to the support of institutes of public health in São Paulo, Brazil, and in Prague, Czechoslovakia.

For the promotion of medical education the Foundation gave \$300,000 to the University of Hongkong for the endowment of chairs of medicine and surgery; appropriated \$500,000 toward its pledge of \$3,500,000 for the rebuilding and reorganization of the medical school and hospital of the Free University of Brussels; continued its payments on the contribution of about \$5,000,000 for buildings and equipment of University College Hospital and Medical School, London; paid sums due on its pledges to the medical schools of five Canadian universities and to the Pasteur Institute in Paris; provided the services of an associate dean for the medical school of the University of the Philippines; and of a pathologist for the Medical School of São Paulo, Brazil; and sent an American pathologist to give a course of lectures at Salvador University. A study of medical schools and the needs of medical science in Europe was carried on by the Division of Medical Education. Scientific equipment for English and American medical journals and books were furnished to 312 libraries in 82 European institutions which had been virtually out of research in English-speaking countries by the war or by the subsequent fall in the rate of exchange.

The program of the Rockefeller Foundation in the development of western medicine in China is handled through the China Medical Board, whose main contribution has been in the establishment and maintenance of the Peking Union Medical College. The 14 college and hospital buildings, together with residences for the faculty, dormitories, power house, gas plant, service buildings, etc., were sufficiently complete in 1921 for occupancy, and 1922 saw the end of the construction program. There are now 61 members of the medical faculty, 29 house officers, 19 members of the premedical faculty, and 34 nurses (including instructors in the Nurses Training School). During the year increased attention was paid to premedical education and an adviser in this field was appointed. Other activities of the year included: appropriations for the science work of three institutions — Peking University (mission), \$105,000, Nankai College (Chinese), Tientsin, \$95,150, Southeastern University (Chinese), Nanking, \$95,150; grants totaling \$188,452.50 to 10 hospitals for maintenance, buildings and equipment, based largely on their usefulness as means of continuing the professional growth of young doctors; appointment of 11 eminent American and European scientists as visiting professors at Peking Union Medical College or other schools; numerous fellowships for Chinese and missionaries at Peking Union Medical College and a few abroad; and aid to agencies in China aiming to promote general and medical education and improve hospital administration. Pending possible changes in several medical schools no new appropriations were made for medical education

except a small maintenance grant to Shantung Christian University.

Fellowships for which funds were provided directly or indirectly by the Foundation were held in 1922 by 226 individuals from 23 countries. The fellowships granted through the International Health Board, the China Medical Board, the Division of Medical Education and the National Research Council provide for both men and women an opportunity for study in the United States and other countries to fit them for leadership and technical efficiency in preventive medicine and medical education. The dean and six influential members of the faculty of the University of Strasbourg, Alsace, visited the United States, Canada, and England as guests of the Division of Medical Education to study organization and methods in medical education. A leading health authority in France also came to the United States as the guest of the International Health Board.

The Foundation has its headquarters at 61 Broadway, New York City. Its officers and members are: Officers — George E. Vincent, president; John D. Rockefeller, Jr., chairman of the board of trustees; Edwin R. Embree, secretary; L. G. Myers, treasurer; Robert H. Kirk, comptroller. Members — John G. Agar, Wallace Buttrick, John W. Davis, Simon Flexner, Raymond B. Fosdick, Frederick T. Gates, Harry Pratt Judson, Vernon Kellogg, John D. Rockefeller, John D. Rockefeller, Jr., Wickliffe Rose, Julius Rosenwald, Martin A. Ryerson, Frederick Strauss, George E. Vincent, William Allen White, Ray Lyman Wilbur.

E. R. EMBREE,
Secretary.

ROCKEFELLER, William, American capitalist: b. Richford, Tioga County, N. Y., 31 May 1841; d. at his country estate, Rockwood Hall, North Tarrytown, N. Y., 24 June 1922. He was a brother of John D. Rockefeller, the Standard Oil magnate. He attended the Academy at Owego, N. Y., and later the public schools of Cleveland, Ohio, to which city his parents moved in 1853. When 17 years of age he went to work in a Cleveland office at a very low salary. Two years later he entered the employ of a produce commission firm as a bookkeeper, and in 1862 became a partner in the concern. In 1865 he joined his brother John D. Rockefeller in the oil business. The latter had then been engaged in the oil industry about three years, with Samuel Andrews and M. B. Clark as his partners. The firm name was Andrews, Clark and Company, and already it was rated as wealthy. After William Rockefeller entered the business two new firms were organized — William A. Rockefeller and Company in Cleveland and Rockefeller and Company in New York. Five years later, in 1870, the Standard Oil Company, with a capitalization of \$1,000,000, was formed by combining the various plants which were engaged in the refining and sale of oil. The partners in this enterprise were John D. Rockefeller, William Rockefeller, Henry M. Flagler, Samuel Andrews and Stephen V. Harkness. In 1874 the Standard Oil Company acquired control of several important refineries in Pittsburgh, Philadelphia and New York, including the great plant of Charles Pratt and Com-

pany located in the last mentioned city. Thereafter one company after another was brought under the control of the Standard with the result that by 1879 it enjoyed almost a monopoly in oil transportation facilities, including pipe lines, while the Standard "alliance" produced approximately 95 per cent of the refined oil supply of the country. The Standard Oil Trust, afterward dissolved, was organized in 1882, some 50 men holding control of various companies in different States turning over their holdings to nine trustees, including William Rockefeller, who was elected vice-president and a director and also president of the Standard Oil Company of New York, organized at that time. Thereafter he became identified with numerous financial corporations of the first magnitude, including railroads, banks and manufactories. He was vice-president and a director of the Standard Oil Company of New Jersey, and a director of the Hanover National Bank, the National City Bank and the United States Trust Company. He retired from the presidency of the Standard Oil Company of New York in 1911 and, during the same year, resigned as director and vice-president of the Standard Oil Company of New Jersey. Other companies with which Mr. Rockefeller was connected as a director or trustee include the Anaconda Copper Mining Company; Consolidated Gas Company; Union Pacific Railroad Company; Delaware, Lackawanna and Western Railroad Company; Michigan Central Railroad Company; Cleveland, Cincinnati, Chicago and Saint Louis Railway Company; Pittsburgh and Lake Erie Railroad Company; Lake Erie and Western Railroad Company; Brooklyn Union Gas Company; New York Edison Company; Chicago, Milwaukee and Saint Paul Railway Company; West Shore Railroad; New York State Realty and Terminal Company; New York Central Railroad Company, and Amalgamated Copper Company. Mr. Rockefeller was married in 1864 at Fairfield, Conn., to Almira Geraldine Goodsell, who died in 1920. They had four children — Emma, who married Dr. D. Hunter McAlpin; William G., Percy Avery and Ethel Geraldine, who married Marcellus H. Dodge. Mr. Rockefeller, prior to his death, had been a resident of New York City for more than 40 years.

ROCKFORD COLLEGE, a non-sectarian educational institution for women, founded in 1847 and located at Rockford, Ill. In 1922-23 it had a faculty of 43 members, 500 students, property and invested funds totaling \$1,250,000 and an income from all sources of \$225,000. William A. Maddox, Ph.D., is president.

ROCK HILL COLLEGE, a Roman Catholic educational institution for men, founded in 1858 and located at Ellicott City, Md. In 1922-23 it had a faculty of 10 members, 120 students, property valued at \$100,000 and an income of \$50,000. Brother Felician is president.

ROCKY MOUNTAIN SPOTTED FEVER. See PUBLIC HEALTH SERVICE, UNITED STATES.

RODENTS, Extermination of. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

ROENTGEN, Wilhelm Konrad von, German scientist: b. Lennep, Ruhr District, 27

March 1845; d. Munich, 10 Feb. 1923. As the discoverer of the X-ray, the fame of Doctor Roentgen has spread to every civilized corner of the earth. He was 50 years old when, in 1895, he made the great discovery which has gone far toward revolutionizing the science of medicine and surgery. He received his rudimentary education in Holland and then studied at Zurich where he took his doctor's degree in 1869. He first went to Würzburg as assistant to Kundt; then to Strassburg as extraordinary professor, becoming *privat-docent* there in 1874. In 1875 he was made professor of mathematics and physics at the Agricultural Academy of Hohenheim and in 1876 he returned to Strassburg. In 1879 he became professor of physics and director of the Physical Institute at Giesesen and in 1885 he returned to Würzburg. He was director of the Physical Institute of Würzburg University when he discovered the Roentgen or X-ray. The following year (1896) he was awarded the Rumford Medal of the Royal Society in London jointly with Philip Lenard who had conducted researches in the same line. At the time Doctor Roentgen discovered the X-ray which, penetrating matter, makes it possible to see through solids, he was studying the conduction of electricity through gases and had placed a vacuum tube he was using in a black cardboard box which completely cut off the ordinary light. Noticing that, without any apparent cause, a paper screen covered with barium platimocyanide, which was lying nearby began to glow, as if covered with phosphorus, Doctor Roentgen traced the glow to rays from the vacuum tube, the cardboard having failed to stop them. Further experiments showed that these rays made it possible to see coins in a purse, a nail driven into wood, spectacles in a leather case and the bones in the human hand. Inasmuch as the behavior of the light was curious especially in regard to reflection and refraction, doubt arose in Doctor Roentgen's mind as to whether it was a light or not, and he therefore named it X-rays. When he announced his discovery the X-rays were looked upon as some new manifestation of energy. It has since been demonstrated that X-rays differ from ordinary light only in the wave length. From the day of Doctor Roentgen's discovery the value of the X-ray has constantly increased and to-day it is recognized as one of the most valuable therapeutic agents known. Likewise its value as a diagnostic agency is incalculable. All over the world are specialists who devote their entire time to X-ray work. Dentists use it in determining the hidden condition of teeth. It will disclose various internal disorders, such as misplaced or abnormal organs like the stomach and intestines and the presence of hidden malignant growths. Through its use foreign bodies in the human system often can be easily located and their removal made comparatively simple. Bone fractures are easily located by it. Its use in the treatment of disease is being rapidly extended. At least some forms of cancer seems to yield to it, while experts claim that certain eczematous conditions can be cleared up by X-ray treatment in a very brief period. X-ray machines of powerful capacity are now being

used. The rays are among the most useful tools of the chemists and physicists in investigating properties of matter. The first Roentgen Ray Congress was held at Paris in 1900 at which time Doctor Roentgen was awarded the Nobel prize in physics. In addition to the discovery of the X-ray, Doctor Roentgen made many other valuable contributions to the science of physics.

ROLLINS COLLEGE, a co-educational inter-denominational institution, endorsed by Congregational and Presbyterian Churches, founded in 1885 and located at Winter Park, Fla. In 1922-23 it had a faculty of 32 members, 350 students, property valued at \$500,000 and an income of \$129,000. Robert J. Sprague, Ph.D., was acting president, 18 Jan. 1923.

ROMAN CATHOLICS. See CATHOLIC CHURCH, ROMAN.

ROMANCE LANGUAGES. See PHILOLOGY.

ROMANCE LITERATURE. See LITERATURE.

ROOSEVELT MEMORIAL ASSOCIATION. The objects of this Association which was founded and incorporated immediately after Colonel Roosevelt's death, are as follows: To erect a monumental memorial to Theodore Roosevelt in Washington; to establish a memorial park in Oyster Bay; to perpetuate Roosevelt's ideals by spreading the knowledge of his character and career.

The work of the Association thus far has centered mainly in the third aim. A Bureau of Roosevelt Research and Information has been established which is making extensive collections of books, pamphlets, magazine articles, manuscripts, photographs, cartoons, clippings and other material relating to Roosevelt. An exhibition of a part of this material was held at the New York Public Library during the first three months of 1922 and was visited by 100,000 persons. Arrangements have been made with the Woman's Roosevelt Memorial Association, which is building Roosevelt House on the site of Roosevelt's birthplace at 28 East 20th Street, New York City to place the Association's collections there for permanent exhibition. The Association has published the following volumes dealing with Theodore Roosevelt: I, 'Roosevelt in the Bad Lands,' by Hermann Hagedorn dealing with Mr. Roosevelt's life as a ranchman in the valley of the Little Missouri in western Dakota; II, 'Roosevelt in the Kansas City Star,' edited by Ralph E. Stout, containing Mr. Roosevelt's war-time editorials; and III, 'The Americanism of Theodore Roosevelt,' sections from his writings and addresses, compiled by Hermann Hagedorn and edited for school use by Dr. John A. Lester. Other volumes, including an authorized collected edition of Mr. Roosevelt's books, are in course of preparation. A service is to be established to provide schools, churches and clubs at a nominal rental with lantern-slides, moving pictures, books and pictorial exhibits dealing with Mr. Roosevelt's life. A stretch of 13 acres has been purchased at Oyster Bay for the memorial park. Negotiations for the purchase of a further 22 acres are under way. William

Boyce Thompson is president of the Association. Hermann Hagedorn is executive director. The total sum collected by the Association to 1 Nov. 1922, with accrued interest, was \$1,987,352.06. Disbursements since 1 Feb. 1920, have been \$113,610.35. The national headquarters of the Association are at 1 Madison Avenue, New York City.

ROSARY COLLEGE, a Catholic educational institution for women, located at River Forest, Ill. It was incorporated October 1918 and opened in October 1922. Statistics for the year 1922-23 show a faculty of 30 members, 160 students, and property valued at approximately \$1,000,000. Income figures were not available 15 Jan. 1923. The college is under the supervision of the Dominican Sisters.

ROSEN, BARON Roman Romanovitch, Russian diplomat: b. 1849; d. New York, 31 Dec. 1921. His Swedish ancestors settled in Lithuania after the wars of Gustavus Adolphus and acquired wealth and distinction. He was educated at the University of Dorpat and the Imperial Academy of Law at Petrograd. His diplomatic career began at the Russian Legation at Tokio as vice-consul and later secretary. He came to the United States as consul-general from Russia to San Francisco. In 1886-89 he was chargé d'affaires at Washington when there was no Russian Ambassador. He then served as Minister to Mexico, Serbia, Bavaria, Greece and Japan, and in 1905 became Ambassador from Russia to the United States, succeeding Count Cassini. He was one of the Russian plenipotentiaries to the Peace Conference at Portsmouth. He was a man of culture and social tact and spoke a number of languages. During the Bolshevik rule his entire estate was lost and after escaping to New York in the face of dangers and hardships, he wrote for magazines. He published 'Forty Years of a Diplomat's Life' (1921). His death was caused by an automobile accident.

ROSE POLYTECHNIC INSTITUTE, a non-sectarian educational institution for men, founded 10 Sept. 1874, and located at Terre Haute, Ind. It is purely an engineering college. Statistics for 1922-23 show a faculty of 22 members and 255 students. The value of the property and its income were not given. Philip B. Woodworth, Sc.D., is president.

ROTARY CLUB. A business and professional men's organization which came into being in Chicago, Ill., on 23 Feb. 1905, with a group of four men—one a coal dealer, one a mining operator, one a merchant tailor, and the fourth an attorney. At the initial meeting the plan of drawing membership from men of different business or professional callings was adopted. "Rotary" was chosen as the name of the new club because the members met in "rotation" at their places of business. It adopted as its motto, "Service above self—He profits most, who serves best." In 1910—by which time 16 clubs had been formed,—the first convention was held in Chicago, and the "National Association" was formed. Two years later, in order to include clubs in Canada and London, England, the national organization was changed to an International organization. Since 1912 the growth of

the club has been very great. At the beginning of 1923 it had a membership of about 83,500 in 1,280 clubs located in the United States, Canada, Newfoundland, Great Britain, Ireland, Cuba, South America, Panama, China, India, Norway, Australia, New Zealand, Hawaii, the Philippine Island and Japan. This growth is remarkable in view of the fact that the organization has never at any time employed any paid organizers and exercises extreme care in surveying cities and towns applying for membership, to make sure that such communities are ready for a Rotary Club and are of sufficient size from which to secure a membership of representative men and still have the membership restricted to one man from each business or profession. The fact that no charter has ever been surrendered or withdrawn during the 18 years of the club's existence shows the care with which such surveys have been made.

Under the plan of organization a new club must start with not less than 15, nor more than 25 members; and, during the first year of its existence, cannot grow faster than at the rate of three members each month. Each club is a complete unit in itself, and is supposed to make itself a part of the community in which it is established, and to adapt itself to the peculiar problems of that community. A model constitution, which all new clubs are required to adopt was provided a few years ago, but many of the older clubs have their own basic laws. An international board, with headquarters in Chicago, meets every 60 days, and keeps itself informed of the desires and wishes of the clubs; but there is no administration unit between the clubs and headquarters, each club being entirely independent of every other club.

The Rotary Clubs are grouped in what are called districts, of which there were 39 in the world, 1 Jan. 1923. Each district has a governor, elected by the annual convention, from nominations made by the clubs of the district. This governor is an international officer, and the accredited representative of the International Board to the clubs. The governor requires a monthly report from each club, and in turn makes a monthly report to the International Board. None of the International officers, save the secretary general and his assistants, are paid—all are volunteer workers.

The International Board consists of a president, three vice-presidents, a board of directors composed of the foregoing officers and five others, a secretary and a treasurer. No president of the International Rotary can succeed himself.

There is also a Rotary International Association for Great Britain and Ireland, whose officers consist of a president, two vice-presidents and one immediate past-president, a treasurer and a secretary. Its headquarters are in London.

Rotary membership on 1 July 1922 was distributed as follows: 75,749 in the United States and Canada; 6,086 in the British Isles; 1,265 in all other countries.

Each Rotary Club has a board of directors that is its governing body. Annual conventions have been held as follows: Chicago, 1910; Portland, 1911; Duluth, 1912; Buffalo, 1913; Houston, 1914; San Francisco, 1915; Cincinnati, 1916; Atlanta, 1917; Kansas City, 1918; Salt Lake

City, 1919; Atlantic City, 1920; Edinburgh, 1921 and Los Angeles, 1922. The 1923 convention will be held in Saint Louis.

It has been truthfully said that no satisfactory definition of Rotary has yet been framed. This is probably due to the fact that Rotary is the outpouring of a spiritual movement, functioning through Rotary, to focus for action the desires, active or latent, in every one to help his fellow-man. It is also due in part to its vigorous youth and to its constantly finding new methods of expression.

As outlined by its platform, its business and purposes are succinctly: First, To promote recognition of the worthiness of all legitimate occupations and to dignify each member's occupation as affording him opportunity to serve society; Second, To increase the efficiency of each member as a citizen and a business man by the exchange of ideas and business methods; Third, To encourage high ethical standards in every business and profession and in service to the community of each business and profession; Fourth, To promote acquaintance and fellowship among men of various business and professional activities as an opportunity and an aid to service; Fifth, To quicken the interest of every member in public welfare and to co-operate with all other civic organizations in community development.

One of the activities to which each club is requested to devote a large part of its attention is the work among boys. The restoration to health of crippled children has also enlisted a great deal of its attention.

The Rotarian, a monthly magazine, issued at Chicago, is the official publication of the Rotary International. *The Rotary Wheel*, a monthly publication issued at London, is the official publication of the Rotary International Association of Great Britain and Ireland.

JOSEPH T. McALLISTER,

ROTHROCK, Joseph Trimble, American botanist: b. McVeytown, Pa., 9 April 1839; d. West Chester, Pa., 2 June 1922. He was graduated from Harvard in 1864 and in medicine from the University of Pennsylvania in 1867. He served in the Civil War and was wounded at Fredericksburg. From 1877-93 he was professor of botany at the University of Pennsylvania, and from 1893 to 1905 commissioner of forestry for Pennsylvania. In 1903 he founded South Mountain Camp Sanatorium for consumptives of which he was superintendent until 1908. He was a member of Pennsylvania Commandery, Military Order, Loyal Legion. Doctor Rothrock was one of the editors of *Forest Leaves* and author of 'Botany of the Wheeler Expedition' (1878); 'Flora of Alaska' (1867); 'Vacation Cruisings' (1884); and the 'Pennsylvania Forestry Reports' (1895, 1896 and 1897).

ROWING. See SPORTS.

RUBBER. The rubber trade of the whole world was in a bad condition in 1921, but improved much in the latter half of 1922, and is again on the way to prosperity in 1923. The saving factor is, of course, rubber tires, which steadily increase in use as all the world runs on wheels. Brazil, formerly the chief source of the raw rubber, furnished more than half the world's supply up to 1910, when what is known as plan-

RUBBER



Copyright, Ewing Galloway, N. Y.

1 A newly grown Sumatra rubber plantation

2. Giant rubber tree



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tation rubber became an important factor, surpassing Brazil rubber in 1913, and going ahead in leaps and bounds, until in 1922 the plantation product was 25 times as great as the Brazilian. This plantation rubber is cultivated mainly by British companies in the East, and shipped mostly from Singapore, but also largely from Colombo, Belwan-Deli and Penang. Rubber growing was tremendously prosperous from the beginning of the Great War up to 1919, and was so developed that over-production became apparent, and has been a very trying factor for the past few years. In 1922 a British estimate of the stocks of raw or crude rubber on hand was the equivalent of a whole year's consumption of all the nations of the globe. Rubber kept coming along in increasing quantities, and the worldwide depression in industry reduced the demand, especially at the close of 1920 and all of 1921. Brazil lost her rubber trade through adhering to primitive methods of production, and at the same time mistakenly taxing the export. Other localities lost trade in much the same way, and to-day 95 per cent of the rubber comes from the plantations. Attempts are being made by American capital to plant and grow in Sumatra and in the Philippines, where the climate is suitable, in the hope of not being wholly dependent on the British rubber from the plantations.

To check the falling prices of crude rubber, the leading companies in the plantations got together and entered into an understanding to curtail production 25 per cent. This was only a partial remedy, reducing plantation production from its peak of 304,816 long tons in 1920 to 273,000 tons in 1921. Stocks on hand continued enormous, and buyers dictated the market. During the first eight months of 1922 plantation rubber was quoted on the London market at from six and one-half to nine pence, the price nine pence being the equivalent of about 18 cents American. That the producing companies deserved this slump is evidenced by observing their profits during the fat years of the war and after. The 10 leading British companies averaged about 125 per cent in dividends for nearly 10 years, and one declared a stock dividend of 375 per cent. None of the 10 made a dividend of less than 25 per cent in the decade. When it became apparent that the good time was disappearing, a strong effort was made to have the government tax the exportation of rubber progressively and to meet the situation, the British Government put into effect in November 1922 what is known as the Stevenson plan, limiting, by means of a sliding scale of export taxes, the production of rubber in countries under the British flag to 60 per cent of the 1920 crop (335,000 tons), until the price passes one shilling and three pence or approximately 30 cents a pound. After that, according to the *Literary Digest*, the plan provides for a series of adjustments which will permit 100 per cent production only when the price reaches three shillings per pound. As a result of this restrictive measure, coupled with heavy buying, the price of crude rubber advanced in American markets from 13 cents in the early part of 1922 to 37 cents on 23 Jan. 1923. Exportation from British possessions up to 60 per cent of the 1920 production bears a nominal duty of one and one-eighth of a cent gold per pound. Under the Stevenson plan, if exports exceed 60

per cent of the 1920 production, each pound exported is subject to a sliding scale of duties ranging from 7.94 cents to 23.85 cents. As a result of this measure, the Department of Commerce estimates that tires and other rubber articles will cost the American consumer from \$300,000,000 to \$600,000,000 more annually.

In as much as the United States consumes nearly three-fourths of the world's rubber supply, the imposition of the tax on plantation rubber resulted in an appropriation by the 67th Congress of \$500,000 to be used in ascertaining the possibilities of cultivating rubber in the United States possessions, especially in the Philippines and in other countries from which concessions might be obtained.

On 23 April 1923, C. B. Seger, chairman of the directors of the United States Rubber Company, announced three new processes of rubber manufacture, the exclusive property of his company. One involved a new method of making and vulcanizing cord tires; another marking a revolutionary step in rubber manufacture, was called by Mr. Seger sprayed rubber. Of this product he said:

"Sprayed rubber, the result of a new method of producing crude rubber from the original latex, insures for the first time since rubber was discovered, a pure and absolutely uniform product.

"Heretofore all rubber produced and sold on the market has been coagulated out of the rubber latex, by means either of smoke or chemicals. Rubber produced by the old primitive native methods of heat and astringent smoke over a slow fire is contaminated with smoke and other combustion products. Nor can there be any assurance of uniform quality. When rubber is produced by treating latex with acetic acid, the rubber contains acid residues. Furthermore, the acid tends to destroy some of the valuable natural properties of the latex. The new spraying process takes the latex, sprays it into a snow white mist and brings this snow white mist into contact, with pure superheated air, driving out the water of the latex, and nothing else.

"Sprayed rubber is 100 per cent pure solids from the virgin latex. No acid, no smoke. It is dry and pure and remains so. It has greater strength because it contains all the natural strength of the rubber of the original latex unimpaired by chemicals or the destructive effect of machine working. It is uniform in quality—something never before obtained."

The condition of the crude rubber industry can be best understood by studying the following table:

WORLD'S PRODUCTION OF CRUDE RUBBER.
(In Long Tons.)

YEAR	Plantations	Brazil	Other	Total
1910.....	8,200	40,400	21,500	70,500
1911.....	14,419	37,730	23,000	75,149
1912.....	28,518	42,410	28,000	98,828
1913.....	47,618	39,370	21,452	108,440
1914.....	71,380	37,000	12,000	120,380
1915.....	107,867	37,220	13,615	158,702
1916.....	152,650	36,500	12,448	201,598
1917.....	213,070	39,380	13,258	265,698
1918.....	255,950	30,700	9,929	296,579
1919.....	285,225	34,385	7,350	326,860
1920.....	304,816	30,790	8,125	343,731
1921.....	271,233	19,837	2,890	293,960
1922 (estimated)...	360,000	15,000	3,500	378,500

The importations of crude rubber into the United States are entered mostly at the port of New York, though Baltimore, Boston, Seattle, San Francisco and Los Angeles occasionally receive cargoes. The stock comes in very regularly, though December generally sees the largest arrivals. Plantation rubber now constitutes 95 per cent of the shipments. The importations in long tons for the last two years follow:

GRADES	1921	1922
Plantations.....	173,975	276,649
Paras.....	10,915	11,092
Africans.....	2,329	2,691
Guayule.....	58	281
Other.....	86	257
TOTAL IMPORTATIONS.....	187,363	290,970

The imports of crude rubber quoted above do not include all the rubber used in manufacture in the United States, because there is a considerable trade in reclaimed rubber, made from scrap rubber. The questionnaire of the Rubber Association of America, representing reports of 85 per cent of the trade, reports that in the fiscal year ending 30 June 1922, there were over 48,000 tons of reclaimed rubber produced. The stock of crude rubber on hand in the United States at the same date was reported as 82,110 tons and stocks afloat for United States ports 33,266 tons, these being about the normal stocks. The true total of stock is believed to be about 5 per cent greater, however, due to some concerns not reporting.

More than three-fourths of the rubber consumed in the United States goes into rubber tires, and the proportions of its use are well shown in the following table, compiled by the Rubber Association of America for the first six months of 1922. It represents 85 per cent of the country's total, as 15 per cent of the industry failed to report.

The following table shows the number of pounds of crude rubber consumed in the manufacture of rubber products and total sales value

the Rubber Association their inventory, production and shipments. The reports for November 1922, quoted below, are believed to represent fully 85 per cent of the country's production and stocks.

Number manu- facturers reporting	PNEUMATIC CASINGS		
	Inventory	Production	Shipments
62	4,964,976	2,733,134	2,379,708
INNER TUBES			
61	6,210,053	3,850,908	3,075,023
SOLID TIRES			
11	234,684	85,775	61,466

The total value of rubber products exported from the United States in 1922, was \$33,450,832, a gain of \$3,242,877 over 1921. Tire exports, valued at \$20,393,034 in 1922, as against \$16,313,414 in 1921, are responsible for the increase. Rubber belting, hose, and packing exports decreased from \$4,106,937 in 1921 to \$3,154,594 in 1922; while exports of rubber footwear and soles and heels increased from \$3,909,261 to \$4,439,633. Exports of druggists' rubber sundries remained practically even at \$871,465.

Automobile casings were exported at the rate of 110,000 monthly, while inner tube shipments averaged only 78,000 monthly during 1922. The largest markets for casings were: England, 334,043; Argentina, 94,685; Cuba, 94,390; Mexico, 79,747; Canada, 59,884; British South Africa, 50,406; Brazil, 48,033; New Zealand, 47,846; Sweden, 46,862; Australia, 41,384; Philippine Islands, 40,543; Denmark, 32,986; France, 24,373; Spain, 23,058; Uruguay, 22,893; and Norway, 21,353. Only 54,931 casings other than automobile were exported during the year. Solid tires for automobiles numbered 55,665, valued at \$1,518,932.

The 1919 census reported 119,448 wage earners employed in the rubber industry. The estimate in January 1923, was 150,000 employees. A number of rubber manufacturers failed in

PRODUCT	Pounds crude rubber used	Total sales value of manufactured products
Tires and tire sundries:		
Automobile and truck pneumatic casings.....	150,086,346	\$192,890,053
Automobile and truck pneumatic tubes.....	37,630,043	25,660,091
Motorcycle tires (casings and tubes).....	496,423	786,744
Bicycle tires (single tubes, casings and tubes).....	984,876	1,769,331
All other pneumatic casings and tubes.....	1,163,048	1,773,147
Solid tires for motor vehicles.....	16,668,395	11,132,417
All other solid tires.....	487,334	572,814
Tire sundries and repair materials.....	2,501,992	4,874,061
Total tires and tire sundries.....	210,018,457	\$239,458,658
Other rubber products:		
Mechanical rubber goods.....	15,799,724	\$32,361,069
Boots and shoes.....	12,457,112	39,392,773
Insulating wire and insulating compounds.....	2,144,790	7,305,200
Druggist sundries, medical and surgical goods.....	2,793,061	5,805,434
Waterproof cloth, clothing and rubber sheeting.....	2,255,253	6,293,430
Hard rubber goods.....	2,122,174	3,155,510
Heels and soles.....	6,699,675	9,119,552
Miscellaneous, not included above.....	2,468,481	5,198,786
Total other rubber products.....	46,740,270	108,631,774
GRAND TOTAL ALL PRODUCTS.....	256,758,727	\$348,090,432

of shipments of manufactured rubber products in the United States during first half of 1922.

To preserve normal stocks of tires, the majority of the manufacturers report monthly to

1921 and some few early in 1922; but it is believed that liquidation is ended. Tire production has grown from 26,000,000 to 32,000,000 comparing 1920 with 1922, and 1923 starts off

with predictions of 45,000,000. The United States Rubber Company, one of the largest concerns, reported sales in 1922 of \$167,000,000, and profits of \$7,000,000 earned after all deductions. The Firestone Tire and Rubber Company, with sales of \$64,500,000 for its fiscal year ending 31 Oct. 1922 (an increase of 23 per cent), showed earnings of \$7,348,000, after making all deductions.

The rubber manufacturers of America have been working together for two years or more on standardization of product, and the English manufacturers are working on the same lines. There has also been recognized the necessity for the industry on both sides of the Atlantic, to work more in harmony, and in February 1923, a committee of representative men in the British rubber trade visited the United States by invitation, in the endeavor to secure a better understanding. It is expected that more positive standards of grades of quality in tires, tubes, cloth, etc., will result, and become generally recognized. And it may well be that more stable prices of crude rubber will be developed, as a result of the demand of American manufacturers on the plantations producers. See also AUTOMOBILES.

CHARLES H. COCHRANE.

RUHR VALLEY, the valley of the Ruhr River in western Germany and one of the most important industrial and mining districts in Europe. The Ruhr River is an inconspicuous stream, hardly more than 100 miles long, with little volume of water, and navigable even with the aid of its 11 locks for a distance of only 43 miles, says the 'National Geographic Society News Bulletin.' But its valley and the rolling country to the north for a few miles, to which it has given its name, is a region of concentrated industrialism. There, in a district roughly 40 by 10 miles, has been developed the greatest coal production in Europe. And with iron ore available from the nearby former "German Lorraine" and Luxemburg, there came up the industry of fabricating iron and steel which went far toward building up the mighty German Empire of 1913.

The solar plexus of the Ruhr district is Essen, known the world over as the home of the great Krupp works. The town was founded in the 9th century, but as late as 1854 it had but 10,500 inhabitants. Before the World War it had grown to a city of 300,000 and of these nearly 50,000 were employed in the Krupp works. With the development of Essen as a steel and iron centre hundreds of other establishments joined the Krupps until the environs of the city are now a forest of chimneys. But while Essen is the centre of the Ruhr it by no means monopolizes its business. Great cities are thick in this area. Entering the region at Duisburg, its gate-city, with 230,000 inhabitants, by a journey of less than five miles one reaches Oberhausen with a population of 90,000. Three miles farther is Mulheim with 112,000, five miles away Essen with 300,000, and four miles farther Gelsenkirchen with 170,000. By an advance of another four miles into the Ruhr one reaches Bochum with a population of 137,000, while barely ten miles farther to the east and still short of the eastern limits of the region lies Dortmund with 214,000 inhabitants. It is as

though St. Paul, Minn., Flint, Mich., Albany and Rochester, N. Y., Richmond, Va., Grand Rapids, Mich., and Oakland, Calif., were grouped closely over an area slightly longer and somewhat narrower than Rhode Island, while among them were scattered a dozen or more communities ranging in size from Bismarck, N. Dak., and Aberdeen, Wash., to Austin, Texas, and Chattanooga, Tenn.

"In and around practically all of the towns of the Ruhr except those at its gateway are to be found the works of coal mines, while in all are iron and steel plants and numerous other manufacturing establishments. In the cities at the gateway to the Ruhr are centered the banking and transportation facilities for handling the tremendous output of this home of Germany's Tubal-Cains." (Bull. 405-N. S., Nat. Geog. Soc., Washington, D. C.)

"Ruhrort, the part of Duisburg situated where the Ruhr river meets the Rhine, far from being an unimportant town, takes at least one world honor. It is the most extensive river port in the world. When the quays of the older part of Duisburg and those of the little town of Homberg across the Rhine are added, the wharfage facilities of the Duisburg district are fairly staggering in extent. They stretch for more than five miles along the Rhine; and many branched basins have been constructed leading from that river and the Ruhr as though giant hands had been pressed into the earth again and again, leaving a channel for each finger.

"A constant stream of tugs, barges and larger vessels moves in and out of the channels under normal conditions, and the craft of Ruhrort are to be found in all parts of the Rhine. Down the Ruhr valley come coal and some iron, though the larger part of the iron needed in this great industrial region was shipped in before the war from German Lorraine, French Lorraine, Luxemburg, Sweden and Spain. A considerable part of this was brought in on the Rhine. Other raw materials and food products were imported, adding to the commerce, and coal and manufactured products were shipped out in great quantities.

"Near the water front in the Duisburg district are situated innumerable factories and industrial establishments—collieries, steel and iron plants, rolling mills, blast furnaces, foundries, machine shops, chemical works, saw mills, ship yards, and various other enterprises. Because of its importance as an industrial center and river port, the Duisburg region can be looked upon as a Pittsburgh and a New Orleans rolled into one." (Bull. 379—N. S., Nat. Geog. Soc., Washington, D. C.)

Early in 1921, the Entente Allies occupied Dusseldorf, Duisburg and Ruhrort on account of difficulties in securing reparations from Germany. During 1922 France made repeated threats to occupy the region and on 10 Jan. 1923, after the Reparations Commission, at Paris, had declared Germany in default in respect of the deliveries of wood and coal, French and Belgian troops advanced in force into the Ruhr Valley and occupied Essen and Bochum. Week by week in the early part of 1923 the advance continued and city after city was occu-

pied. A policy of obstruction was adopted by the German local authorities. Strikes of coal miners were general and considerable friction developed between the occupying forces and the German civil population. Sabotage marked the railmen's strike and drastic measures were taken by the French command to insure the maintenance of order. See also REPARATIONS.

RUMANIA, a kingdom of Europe on the shores of the Black Sea, bounded by Russia, Hungary and Bulgaria. Capital, Bucharest.

Area and Population.—Rumanian territory was greatly increased as a result of the treaties following the World War. In the following table are given the areas and population of both the Old Kingdom and the territorial acquisitions following the war.

DIVISIONS	Area, square miles	Population
Old Rumania.....	53,489	7,904,104
Bessarabia.....	17,146	2,344,800
Bukovina.....	4,030	800,098
Transylvania.....	22,312	2,678,367
Crisana.....	8,038	1,316,981
Maramuresh.....	6,258	766,666
Benat.....	11,009	1,582,133
Total.....	122,282	17,393,149

Old Rumania is made up of Moldavia (area, 14,710 square miles; pop. 2,145,464); Wallachia (area, 29,810 square miles; pop. 3,298,394); The Dobrudja (area 8,969 square miles; pop. 381,306), and Oltenia (pop. 1,413,897). The second Balkan War added 2,969 square miles with 273,090 population, mostly Turks, at the expense of Bulgaria. The population even in the old territories is by no means homogeneous; Magyars, Saxons, Swabians, Ruthenians, Germans, Bulgars, Russians, Turks and Tatars being well represented. The chief cities are: Bucharest, the capital, 345,628; Chisinau, 114,110; Cernauti, 87,128; Ismail, 85,600; Jassy, 76,120; Galatz, 73,512; Braila, 65,911; Oradea Mare, 64,169; Arad, 63,166; Cluj, 60,808; Ploesti, 57,376; Craiova, 51,877; Constantza, 27,662; and Focsani, 25,287.

Religion.—The national church is the Rumanian Orthodox, the clergy of which are paid by the State. Subventions are granted to the clergy of other denominations. The National Orthodox Church has 9,695,715 communicants. There are 1,483,929 Roman Catholics; 1,456,147 Greek Catholics; 1,344,970 Protestants; 834,344 Jews; 44,087 Mohammedans, and 17,596 Armenians.

Education.—Primary education is free and compulsory in all localities where there are schools. There are 5,764 primary schools with 11,088 teachers and 692,896 pupils. For secondary education there are 76 schools for boys with 1,287 teachers and 44,983 students, and 66 schools for girls with 1,051 teachers and 9,584 students. Thirty-eight of the former and 12 of the latter are state institutions. There are 12 normal schools for men with 181 teachers and 2,425 students; four normal schools for women with 93 teachers and 1,435 students.

There are 129 professional schools (54 for girls) with 869 teachers and about 8,000 students. There are 25 commercial schools with 5,000 students and 25 agricultural schools with 669 students. There are several other special schools. For higher education there are four universities—Bucharest, Jassy, Cluj and Cernauti—with a total of 7,876 students.

Production and Industry.—Rumania is an agricultural country, about 80 per cent of the people being engaged in that industry. The principal grain crop yields for the years 1921 and 1922 are given below:

CROP	1921, tons	1922, tons
Wheat.....	2,138,148	2,600,000
Rye.....	230,674	265,000
Barley.....	985,292	1,955,000
Oats.....	963,168	1,430,000
Indian corn.....	2,772,897	2,360,000

About 12,000 acres are planted under tobacco, the annual yield being about 6,000 tons. The wealth created from forest products is considerable, there being about 18,750,000 acres under forest. The last live stock census showed 4,771,812 head of cattle; 6,159,982 sheep; and 2,444,791 swine and 1,444,232 horses. Salt, lignite, iron and copper ores and petroleum are the chief minerals. Oil production in 1921 was 1,160,885 metric tons. In the autumn the United States Department of Commerce reported that the production of oil in Rumania during September was about 4,000 tons daily. The production for August 1922 was 112,000 tons, as against 115,000 tons for July. For the first eight months of 1922 oil exports were 246,780 tons. The improvement in oil transportation was continued throughout 1922. The oil output for September 1922 was 110,000 tons. Exports of gasoline and refined oil had ceased temporarily in November 1922 by government order. Salt is one of Rumania's chief mineral resources. There was overproduction in the fall of 1922 and the surplus at the mines piled up because of the lack of transportation and many miners were thrown out of work. The salt mines are a state monopoly.

Among the important manufacturing industries are brewing, flour milling and distilling. There are 2,747 establishments of factory grade, capitalized at 2,837,296,627 lei and employing 157,423 operatives (lei equals one franc).

Finance.—Government receipts and expenditures for the fiscal year ended 31 March 1922 had not been published 31 Dec. 1922. The Rumanian Minister of Finance, however, had the following figures compiled, but they apparently do not include certain extraordinary expenditures. Revenues: Old Rumania and Bessarabia, 4,407,540,195 lei; Bucovina and Transylvania, 1,762,242,943 lei; total, 6,169,783,138 lei. Expenditures: Old Rumania and Bessarabia, 4,645,860,219 lei; Transylvania and Bucovina, 1,521,246,704 lei; total, 6,167,106,923 lei. These figures make up the ordinary receipts and expenditures and show a small surplus of 2,000,000 lei. However, no mention is made of the extra credit of 50,000,000 lei for carrying out the provisions of the agrarian reform law in Transylvania, the extraordinary expenditures for the Ministry of War, and various other extra

credits. The foreign debt of Rumania is 30,-250,000,000 lei, of which 10,000,000,000 lei is the proportion of the debts of Austria and Hungary and Russia assumed by Rumania after the World War.

Commerce.—Official figures furnished by the Ministries of Finance, Industry, and Commerce show the exports of Rumania, by quantities, for 1922, in comparison with those for the year 1921, as follows:

COMMODITIES	1921	1922
Cereals:		
Wheat, metric tons.....	75,691	28,110
Wheat flour, metric tons.....	19,423	23,231
Rye, metric tons.....	55,864	26,786
Barley, metric tons.....	387,168	581,986
Oats, metric tons.....	165,466	228,673
Corn, metric tons.....	769,149	291,649
Millet, metric tons.....	33,565	5,909
Bran, metric tons.....	3,957	3,955
Beans, metric tons.....	68,960	76,902
Petroleum and by-products:		
Gasoline, metric tons.....	145,115	131,584
Refined oil, metric tons.....	172,971	272,316
Gas and fuel oils, metric tons.....	15,210	14,877
Lubricating oil, metric tons.....	13,533	16,857
Paraffin wax, metric tons.....		10
Crude oil, metric tons.....	15,511	2
Wood, lumber, etc.:		
Props and laths, metric tons.....	28	354
Boards, of fir, metric tons.....	121,673	622,122
Other resinous wood, metric tons.....	17,119	49,305
Oak lumber, metric tons.....	5	338
Other miscellaneous lumber, metric tons.....	746	6,685
Fir logs, cubic meters.....	20,029	86,559
Animals:		
Bulls, heads.....	131	400
Cows, heads.....	8,687	19,341
Oxen, heads.....	61,634	125,366
Pigs, heads.....	61,351	174,207
Animal products:		
Lard, metric tons.....	786	273
Pork fat, metric tons.....	158	63
Wine, liters.....	397	5,522
Salt.....	7,396	33,999

The United States Department of Commerce reported at the close of 1922 that the business stagnation grew worse in Rumania during the coronation festivities in October. Exchange continued to fluctuate and the cost of living rose gradually. Exportation was of greater volume than was expected in view of the general situation. Contributing factors in the business depression were the short corn crop and the political disturbances in the Near East.

Communications.—The Rumanian merchant marine consists of 158 vessels of 71,158 tons, of which 17 are steam vessels of 29,441 tons. Rumania has 7,240 miles of railways with several new lines under construction. These include the Csermo-Salonta line, 37 kilometers; the Zorleni-Basarabasca line, 180 kilometers; the Bucharest-Opantelimo line, 7 kilometers, and the Braila-Roman line, 17 kilometers. Three other lines aggregating 184 kilometers are projected. Rumania has 27,635 miles of metalled roads. There are 4,700 post offices, 8,612 miles of telegraph lines and seven urban telephone systems with 1,004 miles of lines, and 7,966 interurban systems with 24,168 miles of lines.

Banking, Etc.—Banknote circulation in the middle of October 1922 was 15,370,000,000 lei, an increase of 510,000,000 lei in one month. Exchange stood at \$0.006384 on 10 November. The government at the same time made successful efforts for the consolidation of the foreign floating debt.

Government.—The executive power is vested in the sovereign, who exercises it through a responsible ministry. The legislative power is in the hands of a bicameral chamber—Senate and Chamber of Deputies. The former has 170 members and the latter 347 members. The reigning Sovereign in 1922 was Ferdinand I, born 24 Aug. 1865, the nephew of the late King Carol, whom he succeeded 11 Oct. 1914.

History.—Early in the year the Jonesco Cabinet was succeeded by a Liberal Ministry under the leadership of Jan Bratiano. The new ministry attacked energetically the problems of economic reconstruction and made a survey of the nation's resources. It was pointed out that while Rumania's war debt did not exceed 3,000,000,000 lei, loans to the extent of 11,-000,000,000 lei had been contracted following the Armistice, of which 6,000,000,000 lei went to the redemption of foreign currencies in the territories acquired as the result of the war. In Transylvania several Hungarians were imprisoned charged with conspiracy against the safety of the state. The attitude of the Russian Delegation at the Genoa Conference with regard to Bessarabia caused anxiety to the Rumanian Government. It was felt that the Soviets might undertake a hunger offensive against Rumania. The Premier went to Paris, where he had important negotiations with the French government and military authorities, with the object of an understanding with France as to a common plan of action in case Rumania was invaded by the Russians. After a long interview with Marshal Foch on 24 May it was understood that France would supply arms and munitions and loan staff officers to help direct operations. Agrarian reform was initiated in the acquired territories by transferring lands to the peasants on a system of forced rents pending a more permanent settlement. The great social event of the year was the wedding of the Princess Marie to King Alexander of Serbia in Belgrade on 8 June. During the year it was manifest that the country was fast recovering from the chaos of the war. In 1920 flour had to be imported from Australia and from the United States, and other foodstuffs from France, Canada and Spain. In 1922 there was a surplus of cereals for export. The Constitution is to be redrafted in order to co-ordinate the four legal codes in use in the country as a result of the acquisition of territory from Russia, Austria and Hungary. King Ferdinand and Queen Marie were crowned with elaborate ceremonies at Alba Julia on 15 October. On 10 November Eftimie Antonescu arrived in the United States to confer with American officials relative to the repayment of Rumania's debt to the United States. The final arrangement consisted of a refunding plan with its adoption contingent upon the approval of the interested Allied powers. Rumania is contemplating the acquisition of subsoil rights similar to those of Mexico in order to keep her oil fields from the grasp of foreign capitalists. In October Rumania sent a note to the Russian government relative to the dispute about Bessarabia, and emphasizing the fact that Russia had seized Bessarabia by force in 1812. Rumania offered to open negotiations if Russia accepts the Dniester River as

the Russo-Rumanian frontier. On 10 November the Soviet Foreign Minister, Tchitcherin, replied to the Rumanian note, stating that Russia regards the Pruth as the frontier and requires Rumania to evacuate Bessarabia, as Russia will never agree to the annexation of that province by Rumania.

RURAL CREDITS. A system of credits provided for in the Agricultural Credits Act, passed by the 67th Congress on 3 March 1923 and designed to enable the farmer to secure the sort of credit he needs to produce efficiently and market in an orderly way the products of the farm. The act represents an effort by Congress to meet a need which has been felt for at least 50 years. It furnishes the basis for a system of intermediate credit adapted to farm conditions and farm needs and is expected to bring about a reduction in the interest farmers pay for money borrowed.

The act is divided into two parts. One part provides government agencies for handling agricultural loans. The other part authorizes the organization of private agencies under government supervision for making loans on live-stock security and on farm commodities on the way to market.

The government loan activities will be carried on in connection with the Federal land banks. At present the country is divided into 12 districts, and in each of these districts there is a Federal land bank which makes land mortgage loans, these 12 banks being directed by a central Federal Farm Loan Bureau in Washington. In connection with each of these land banks there is to be established an intermediate credit bank, located in the same city with the land bank and under the supervision of the officers and directors of the land bank. The Federal government supplies each of these intermediate credit banks with a capital not exceeding \$5,000,000. These intermediate credit banks are authorized to discount farmers' notes which have been taken by banks and other financial institutions, and to carry such notes for a term of from six months to three years. The banks may also loan direct to farmers' co-operative associations under conditions set forth in the act.

These intermediate credit banks may issue debentures having back of them the farmers' notes taken by the banks. These debentures, it is believed, can be sold to people wishing a safe investment. They are exempt from taxation, just as the bonds issued by the Federal land banks are exempt. The interest charged by the intermediate credit banks may not exceed by more than 1 per cent the interest paid on the debentures issued, and the farmer who borrows must not be charged an interest rate of more than 1½ per cent above the interest charged by the intermediate credit bank.

It is the contention of the advocates of the law that the farmer will find he can borrow needed capital for a period up to three years without having to pay an unduly high interest rate, without having to renew his notes every 90 days or six months, and without being in danger of having to sacrifice his crops or live stock because of a sudden financial flurry.

The second division of the act authorizes the organization, under a Federal charter, of

national agricultural credit corporations, these to be organized by private capital. They will be under the supervision of the Comptroller of the Currency, just as are other national banking institutions. Each must have a capital stock of at least \$250,000. Such corporations may issue collateral trust debentures up to 10 times their capital and surplus. It is expected that corporations of this character will be organized in the Western States where the live-stock industry is important and where now cattle loan companies are in operation.

In addition to the provisions of the act designed to furnish the farmer intermediate credit, certain changes were made in the law under which the Federal land banks operate and in the Federal Reserve Act. Provision for the establishment of the co-called permanent organization of the 12 Federal land banks is made by providing that three out of the seven directors for each bank are to be elected by the borrowers from the bank and three are to be appointed by the Federal Farm Loan Bureau. The seventh director, who will be the president of the board, will be chosen from three persons who have received the highest nomination vote for this position by the borrowers or stockholders of the bank.

Heretofore the maximum amount which might be loaned to any individual by a Federal land bank was \$10,000. This has been increased to \$25,000. Also the purpose for which mortgage loans may be made has been broadened to include the repayment of any existing indebtedness.

The Federal Reserve Act was amended by broadening the definition of what is called agricultural paper, making it include the grading and processing of agricultural products by co-operative marketing associations. Heretofore the Federal Reserve Banks have not been permitted to discount agricultural paper for a longer period than six months. This period has been increased to nine months.

A large number of State banks are not now members of the Federal Reserve System, some of them because their capital is not large enough to meet the requirements of the law. An amendment to the Federal Reserve Act, designed to encourage small banks to join the system, was incorporated in the Agricultural Credits Act. A bank which has capital equal only to 60 per cent of the capital required of national banks may now be admitted, if within a reasonable time assurance is given that the capital will be increased to correspond with the capital required of national banks.

The life of the War Finance Corporation was extended up to 29 Feb. 1924, the expectation being that by that date the new credit facilities provided for under the Agricultural Credits Act will be sufficient to meet the needs. See also **FARM LOAN SYSTEM, FEDERAL.**

RUSH-BAGOT AGREEMENT. See **PEACE AND ARBITRATION, INTERNATIONAL.**

RUSSELL, Lillian (Mrs. Alexander P. Moore), American light opera singer and famous stage beauty: b. Clinton, Iowa, 4 Dec. 1861; d. Pittsburgh, Pa., 6 June 1922. She was the daughter of Charles E. and Cynthia H. Leonard, and was christened Helen Louise, though her

family and intimate friends called her "Nellie." When she was four years old her parents moved to Chicago where her father engaged in the printing business and published the works of Robert G. Ingersoll, and where her mother, an ardent equal suffragist and an intimate friend of the late Mrs. Susan B. Anthony, developed into a well-known lecturer and public speaker. Nellie Leonard attended the Convent of the Sacred Heart in Chicago and made her stage debut when 10 years old in a play which constituted a part of the commencement exercises of the convent. She next attended Park Institute, a West Side Chicago finishing school, and at the age of 14 sang at a students' concert given at Kimball Music Hall. In Chicago she studied both vocal and violin music and for a time sang in a church choir. In 1879 her mother took her to New York to study for the opera under Leopold Damrosch. Her first professional appearance upon the stage was made during the same year as a member of the chorus in Edward E. Rice's production of 'H. M. S. Pinafore.' Later she sang at Tony Pastor's Theatre in 14th Street, where she was billed as an English ballad singer and for a time sang ballads exclusively. It was at the beginning of this engagement that she adopted the name of 'Lillian Russell' by which she was known professionally throughout the remainder of her career. Pastor later gave her a part in a condensed version of 'Olivette' and thereafter she appeared in a burlesque of the 'Pirates of Penzance' entitled 'The Pie Rats of Penn Yann.' She next joined a company which made a short trip to California, playing 'Fun in a Photograph Gallery' and 'Babes in the Wood,' and upon her return to New York she was engaged to sing D'Jemma in 'The Snake Charmer.' She next appeared as the Princess in 'Olivette,' then in 'Patience' and thereafter in 'The Sorcerer.' Joining the New York Casino cast she sang in the 'Princess of Trebizonde.' In 1884 she went to London where she sang at the Gaiety Theatre in 'Virginia' and also appeared in 'Polly,' at the Novelty Theatre. Other productions in which she appeared include: 'Pocahontas'; 'The Girl with the Glass Eyes'; 'The Maid and the Moonshiner'; 'Dorothy'; 'The Queen's Mate'; 'Nadgy'; 'The Brigands'; 'The Grand Duchess'; 'Poor Jonathan'; 'Apollo'; 'La Cigale'; 'The Mountebanks'; 'Girofle-Girofla'; 'The Princess Nicotine'; 'The Queen of Brilliants'; 'La Perichole'; 'La Tzigane'; 'The Goddess of Truth'; 'The Little Duke'; 'The American Beauty'; 'The Wedding Day'; 'La Belle Helene'; 'Erminie'; 'Fiddle-dee-dee'; 'The Big Little Princess'; 'Barbara's Millions'; 'The Butterfly'; 'Wild-fire'; 'The Widow's Might'; 'The First Night'; 'In Search of a Summer,' and 'Hokey Pokey.' She also appeared frequently in vaudeville. For a number of years prior to her death she wrote "beauty" articles for newspapers which were widely syndicated. She published 'How to Live a Hundred Years,' (1913) and her personal reminiscences which were appearing serially in the *Cosmopolitan* magazine at the time of her death. In the winter of 1922 she spent several months in Europe on a special mission for the United States Department of Labor. Her death was attributed to an accident she

suffered on shipboard as she was returning to the United States. Miss Russell was thrice married before she married Alexander P. Moore, of Pittsburgh, Pa., now Ambassador to Spain, on 11 June 1912. Her first husband was Harry Braham, conductor of Edward E. Rice's 'Pinafore' company. She next married Edward Solomon, conductor of the Casino Orchestra, 10 May 1884. Her third husband was Signor Perugini, in private life John Chatterton, an operatic tenor, whom she married 22 Jan. 1894.

RUSSELL SAGE COLLEGE, a non-sectarian institution for women founded in 1916 and located at Troy, N. Y. In 1922-23 it had a faculty of 32 members, and a student enrollment of 307. Value of the institution's property and its income not disclosed. Eliza Kellas, Ph.D., is president.

RUSSELL SAGE FOUNDATION, an institution established by Mrs. Russell Sage in memory of her husband. The endowment was \$10,000,000, to which \$5,000,000 was added by will. It was incorporated by an act of the legislature of New York in April, 1907, for "the improvement of social and living conditions in the United States of America." The Foundation does not relieve individual need or duplicate the work of existing agencies. It studies and interprets facts with regard to social conditions and methods of social work, makes the information available by publications, conference, and other means of public education, and seeks in various other ways to stimulate action for social betterment. The Trustees of the Foundation are: Robert W. deForest, President; Mrs. William B. Rice, Vice-President; Charles D. Norton, Treasurer; John M. Glenn, Secretary and General Director; Frederic A. Delano, John H. Finley, Dwight W. Morrow, Louisa Lee Schuyler, and Mrs. Finley J. Shepard. The direct activities of the Foundation are carried on by eight departments. They are, with their directors, Charity Organization, Mary E. Richmond; Child-Helping, Hastings H. Hart; Industrial Studies, Mary Van Kleeck; Publication and Library, Frederick W. Jenkins; Recreation, Lee F. Hanmer; Remedial Loans; Statistics, Ralph G. Hurlin; Surveys and Exhibits, Shelby M. Harrison.

The Charity Organization Department teaches and publishes in the field of charity organization. Its studies have so far been confined to social case work, to the co-operation of social agencies and to their administrative details. 'Social Diagnosis,' by Mary E. Richmond, entered its seventh printing, in 1922, and, although written primarily for social workers, has made a wide appeal to others. A digest, 'American Marriage Laws,' by Fred S. Hall, Associate Director of the Department, and Elizabeth W. Brooke, was followed by a study of the administration of marriage laws in 83 cities, which has continued through the last three years. Recently, the Department began investigating the burden of unemployment in 15 American cities. 'What Is Social Case Work?' one of the latest publications, contains an analysis and interpretation of social work by the director.

The Child-Helping Department has begun an intensive study of the organization and administration of 100 institutions for delinquent chil-

dren. The field work in the study of schools and reformatories for boys is being done by William H. Slingerland, and for girls, by Margaret Reeves. No comprehensive study of this kind has previously been made. The Department conducted its usual service of advice and information with reference to the improved care of dependent, delinquent, neglected, and defective children, and has furnished assistance to those who were founding or reorganizing child-caring agencies. Advice has been given with reference to proposed cottage institutions for Catholic children at Cleveland, Toronto and St. Cloud, Minnesota. The Department has issued many publications on child welfare; juvenile delinquency and problems of institutional care, also other pamphlets concerning probation, methods of dealing with girls and women awaiting court action, practical prison problems, self-government in a county prison farm, a survey of Florida jails and a model plan for jails. A recent book edited by Dr. Hart, 'Plans and Illustrations of Prisons and Reformatories,' contains descriptions and illustrations of several of the best designed reformatories for minors, and proposed plans for prisons and jails, including a new plan by Dr. Hart for a metropolitan jail.

Since the World War, the Department of Industrial Studies has been engaged in a series of investigations on the participation of workers in determining policies and practices that directly affect their welfare in industry. These include an employees' representation plan in the bituminous coal mines and steel works in the West, a works' council in a Federal government plant, and a plan of employees' representation in the textile industry. A study is also being made of a well-established and apparently successful scheme for co-operative relations between management and employees in a large department store. 'The Coal Miners' Insecurity,' a pamphlet containing an analysis of the fundamental economic facts which make for unrest and inefficiency in the bituminous coal industry, was published two weeks after the beginning of the nation-wide strike in April, 1922. Facts presented led to the conclusion that unless the industry is reorganized, so as to stabilize production and make employment regular, the waste and bitterness of strikes will be unavoidable.

The Department of Recreation has considered such subjects as recreation legislation, athletics and games for school children, community use of school plants, holiday celebrations, municipal administration of recreation facilities and rural recreation. Recently the Department made experiments and demonstrations in the use of physical recreation and of music in hospitals for mental diseases and in correctional institutions. The results achieved indicate far-reaching possibilities in the use of games, drills and athletic activities as well as of music for both recreative and therapeutic purposes. Clarence A. Perry, Associate Director of the Department, has been conducting a study of the little theatre movement and is preparing a booklet on community dramatics. During 1922 the national athletic badge test standards for boys and girls were revised and extended on the basis of nation-wide experience in their use and recent progress in physical training methods. A study of recreation legislation in the United States, including

Federal and State laws and city ordinances, will aid the staff in supplying information on this subject and in providing material for a publication.

The Department of Remedial Loans makes known the evils of the small loan business; urges the passage and enforcement of adequate small loan laws; encourages the organization of remedial loan societies in co-operation with the National Federation of Remedial Loan Associations, and fosters the formation of credit unions.

During 1922, there was a continuation in various States of the effort to secure the enactment of a Small Loan Law, prepared some years ago by Arthur H. Ham, formerly director of the Department. This law requires that individuals and associations making loans of \$300 or less be licensed and supervised by State banking departments; limits interest charges to a maximum rate of 3½ per cent a month, to be computed only on unpaid balances; and forbids fees. The Department has organized and given considerable time to establishing a central organization of credit unions in New York City, has completed a study of savings and loan plans among employees, and also study of credit union developments in Massachusetts. During the year, a pamphlet was issued on 'The Progress and Improvement of Small Loan Legislation.'

The Department of Statistics assists the other departments in conducting researches and insures the accuracy of statistical material published by the Foundation. Its recent independent researches include a study of wages and changes in the cost and standards of living in the United States from 1800 to the present time.

The Department of Surveys and Exhibits has continued its study and development of methods of gathering facts concerning social conditions, of working out plans for improvement on the basis of the facts, and of presenting the findings to the public. One of the chief developments in the field of social publicity has been in securing its recognition as an important branch of social work. Progress has been made in this direction through the planning by Evart G. Routzahn and Mary Swain Routzahn of a course of study for the New York School of Social Work, the publication of a 'Reading List on Publicity Methods' and the organization of a number of conferences in connection with annual meetings of social workers and of public health workers.

Recently the field work of a comprehensive study on national, State and local public employment offices was completed. The Department participated in an exhibition and festival called "America's Making" in New York City, which celebrated immigrant contributions to the life of America. ¶

The Foundation maintains a free public library containing more than 21,000 books and 61,000 pamphlets on social problems. Recent bibliographical bulletins issued by the Library are: 'Psychological Tests in Industry'; 'Unemployment'; 'Seasonal Industries'; 'Books of 1921'; 'Social Settlements'; 'Motion Pictures'; and 'American Foundations.' The Library also has published the 'Social Workers' Guide,' listing reports of approximately 4,000 institutions, Federal, State, and municipal. The Foundation also issued in 1922 'The Settlement Horizon,' a comprehensive study of the settlement move-

ment, past and present, by Robert A. Woods and Albert J. Kennedy.

The Foundation has from time to time invested funds in social enterprises, such as the Chattel Loan Society of New York City and the National Employment Exchange, in order to start them on a sound basis and make demonstrations that would encourage similar ventures elsewhere. Some years ago, a large sum was invested in the development of Forest Hills Gardens, in Queens Borough, New York City, for the purpose of establishing a suburb that would be planned and built up in a scientific, substantial and attractive way. Purchasers of lots and houses were allowed to pay about half the value of their holdings in monthly instalments covering a period of ten years. Having accomplished its purpose, the Foundation has recently sold to a number of residents of the Gardens the stock of the Sage Foundation Homes Company, which was created to manage and develop the property.

The Foundation in 1922 appointed a committee to prepare a plan for the future development of the City of New York and the territory adjacent to it. The members are, Charles D. Norton, Chairman; Robert W. deForest, Fred-eric A. Delano, John M. Glenn, Dwight W. Morrow and Frank L. Polk. Frederick P. Keppel is secretary and Flavel Shurtleff, assistant secretary. The Foundation has made a liberal appropriation for the work and is furnishing offices in the Foundation building. But it is not expected that a project of such magnitude can be sustained by the Foundation alone.

RUSSIA, officially Allied Soviet Republics, a Federal state of eastern Europe and northern Asia, formerly an Empire. The Empire covered one-seventh of the surface of the earth, having an area exclusive of internal waters, of 8,417,118 square miles. The population was estimated at 182,182,600 in 1915. After the fall of the Empire considerable territory was ceded to the border new states together with their populations. The Soviet census of 1920 gives the total area of the Soviet Federation, together with the Far Eastern Republic (joined to the Soviet in 1922) as 8,166,130 square miles with a population of 131,546,045. For the areas, populations, production, industries, etc., of the new states once part of Russia, see articles on ESTHONIA, FINLAND, LATVIA, LITHUANIA, POLAND, etc.

The chief divisions of the Soviet Republics are:

European Russia:	Area	Population
Great Russia	1,290,440	65,751,898
Ukraine (nine provinces)	174,510	26,001,802
White Russia	23,290	1,634,223
Minor areas (Europe)	1,739,760	21,404,745
Siberia	4,210,420	9,257,825
Far East Republic	652,740	1,811,725
Associated Republics:		
Azerbaijan	33,970	2,096,973
Armenia	15,240	1,214,391
Georgia	25,760	2,372,403
Asiatic connections:		
Bokhara	79,440	3,000,000
Khiva	24,310	519,438
Mongolia	5,556,000	645,000

The chief cities of Russia are Petrograd (Pop. 1915; 2,318,645, probably less by 1,000,000

in 1922); Moscow, the capital of the Soviets, 1,050,011; Odessa, 631,040; Kharkov, 258,360; and Kazan, 195,300.

Religion.—Under the old regime the Russian Orthodox Church was the state church. This church was disestablished by the Soviet Government and certain categories of its property were confiscated. After the Revolution of 1917 it was stated that all religions might be freely professed in Russia. It soon developed that religious forms were distasteful to the governing authorities and persecution of the old hierarchy ensued. At the same time evidences were not wanting to show that the Soviet Government was attempting to set up a State Church, by combining the principles of Christianity and those of Karl Marx. This about face on the part of the authorities was due to a realization on the part of the government of the hold that the old church and the old forms of the faith had on the great masses of the people and also to the fact that the church was the most powerful obstacle in the way of the socialization of Russia. Outside the Orthodox faith it is estimated that there are 12,000,000 of other faiths, with the Roman Catholic and the Lutherans prevailing.

Education.—All education is in charge of the Commissariat of Education, whose scope is much wider than that of the Former Minister of Education. It has taken over the state theatres, the Academy of Arts, the Imperial Musical Society and other musical schools and institutions. The budget of the Department for the first nine months of 1922 was fixed at 123,000,000 gold roubles. The chief reform in the ordinary schools has been the institution of the Labor Schools. Attendance is compulsory and there are two grades in the Labor School, one for children of from 8 to 12 years and one for children of from 13 to 16 years. Lunches and all necessary equipment, books included, are provided and co-education is the rule. In the first grade the children are taught to make the school self-supporting and technical work begins in the second grade as part of the general industrial system. In 1922, it was reported that Russia had 91,500 schools with 7,200,000 children in attendance. There are 23 universities and in addition institutes of various descriptions for the special sciences. There are 57 higher pedagogical institutions with 10,305 students; 154 three-year pedagogical courses with 18,000 students; and 90 one-year pedagogical courses with 5,400 students. The campaign against illiteracy, launched in 1920, has resulted in the teaching to read and write of about 5,000,000 out of the 30,000,000 illiterate total. It is stated that only 15 per cent of the Soviet army are illiterate, as compared with 85 per cent in the Czarist armies of pre-war days.

Production.—The Soviet economic system is based on the theory of state ownership and control of the principal means of production, distribution and exchange. In October 1922 the official report of the General Council of Russian Trades Unions at their Fifth Congress in Moscow stated that the average wages of the Russian factory workers amounted to \$4 per month at that time. As the report pointed out this was a great improvement from the wage

of \$1.66 per month in March 1922. The question arose: How did the workers manage to live on a wage so low. The answer was that the difference was made up by pilfering and speculation.

It was calculated that from these two sources the workers managed to increase their ordinary earnings by an average of six shillings a month. And yet the workers, compared with pre-war conditions, received only half of the subsistence minimum.

The symptoms of a speedy recovery of Russian agriculture, while the disintegration of Russian industries was still going on, was causing great anxiety in Soviet quarters in the closing months of 1922. It is considered that if the present disintegration of the towns is not arrested the existing predominance of the proletariat in the State will have to give place to that of the peasants. Rykov, Lenin's deputy, in his address to the Trades Unions Congress, said: "The harvest of this year, which yielded between 60 and 70 per cent of the normal agricultural production of Russia, has already manifested the danger that lies in the whole system of our economy, the danger which above all threatens the working class. The danger is that agriculture is able to recover much more speedily than our industries. One year of good harvest tends to turn the general situation in our Republic in favor of the peasants as against the workers. Two or three consecutive years of good harvests will result in the economic position of the peasants out-running by far that of the working class." The measures Rykov recommended were: To increase taxation, to squeeze all other expenditure save that for big industry and transport and by all means to increase the output of the mines, to improve transport, and to revive big industries.

The final figures of the 1922 harvest in Russia, according to the Central Department of Statistics of the Soviet Government, show the yield of the principal bread crops, including oats and barley, to be 2,380,000,000 poods. (The corresponding pre-war figure is 4,000,000,000 to 4,500,000,000 poods.) The grain production of Soviet Russia comes to 1,650,000,000, and of the Soviet Ukraine to 730,000,000 poods. Calculated per head of the population, the yield in Soviet Russia is far below that of the Ukraine. In the former it comes to 21.7 poods per head, in the latter 34.5 poods. The average per head of the whole of Russia is 24.4 poods.

On the face of official figures, the average yield per head of 24.4 poods should leave a certain surplus margin above the consumption of Russia; but it should be remembered that the 2,380,000,000 poods include also the principal fodder stuffs. Therefore the average per head quoted above should be respectively diminished, as the figure 24.4 includes also the fodder stuffs, as for instance, oats and barley, etc., used for the feeding of cattle.

Industrial Production.—The following data are reproduced directly from tables published in the Moscow *Izvestiya* of 7 Nov. 1922. They show the trend of production in the principal industries in Soviet Russia, in comparison with pre-war output. It will be noted that in

several instances the figures for 1922 are incomplete.

PRODUCTION OF INDUSTRIES IN SOVIET RUSSIA DURING THE FISCAL YEARS ENDED SEPTEMBER 30, 1913 AND 1922.

COMMODITIES PRODUCED	1913	1922
Coal, poods ¹	1,738,000,000	591,270,000
Petroleum, poods.....	564,000,000	274,265,000
Ore mining (iron and manganese), poods.....	638,400,000	13,478,000
Salt, poods.....	121,800,000	43,951,000
Pig iron, poods.....	257,400,000	10,184,636
Open-hearth ingots, poods.....	259,300,000	19,314,560
Rolling-mill products, poods.....	214,200,000	15,248,660
Locomotives, new, number.....	609	102
Railroad cars, new, number.....	20,492	842
Plows and harvesters, number.....	778,000	47,032
Electrical machinery and supplies, gold rubles.....	42,211,000	11,109,800
Cotton yarn, poods.....	16,000,000	2,712,000
Woolen yarn, poods.....	2,400,000	654,300
Flax yarn, poods.....	2,093,000	962,846
Silk fabrics, arshins ²	60,000,000	2,469,000
Tanning, hides.....	16,500,000	6,300,000
Boots and shoes, pairs.....	54,880,000	3,001,000
Rubber materials, gold rubles.....	78,000,000	28,103,000
Rubber shoes, pairs.....	20,000,000	4,041,000
Paper, poods.....	9,100,000	1,622,000
Matches, cases.....	3,803,000	701,266
Basic chemicals:		
Acids, poods.....	15,571,000	2,916,710
Alkalies, poods.....	12,014,000	2,532,800
Drugs, kilos.....	5,000,000	959,475
Sugar, poods.....	82,806,000	10,000,000
Tobacco, funts ³	23,790,000	16,015,000
Glass, poods.....	11,200,000	919,717
Alcohol, vedros ⁴	200,874,000	4,872,500

¹ 1 pood = 36.1 pounds; or, approximately, 62 poods = 1 long ton.

² 1 arshin = 28 inches.

³ 1 funt = 0.9 pound.

⁴ 1 vedro = 2.7 imperial gallons, or 3.25 United States gallons.

⁵ For eleven months.

⁶ For nine months.

⁷ For the crop year; estimated on the strength of refineries' reports as published up to 31 December.

Soviet Land Policy.—The land policy of the Soviet Government since the Revolution is a story of perpetual attempts to bring about some harmony between the divergent interests and inclinations of the industrial and agricultural classes.

In the years following the land-socialization policy, there was a marked decrease in the area under cultivation. Whatever the causes of this decline, the prevailing opinion, even among Bolsheviks, seems clearly to have been that something was radically wrong with the Government policy, and the Government has been forced by circumstances to take two highly important steps in the reversal of that policy.

The first step, in the spring of 1921, was a virtual abandonment of the principle that the entire product of the farms belonged to the State. All peasants who paid promptly and fully a fixed tax-in-kind were given the right to dispose of any surplus in any manner they chose. This was followed by a series of measures cutting down the number of commodities subject to tax in kind from 13 to 4—cereals, hay, meat and butter—reducing somewhat the total quantity to be taken, and more clearly defining the method of assessment and collection. The second step, taken in the spring of 1922, was a complete revision of the fundamental law of land possession. While it re-

iterates the basic principle that the land belongs to the State and repeats the prohibition against the purchase, sale, and mortgage of land, it completely abandons the idea that "all forms of individual use of the land should be regarded as merely temporary and doomed to disappearance." The peasants are given not the technical ownership but the actual possession of the land. The old village communities are allowed to continue their practice of permanent group possession with repartition from time to time to their members for actual use. At the same time the individual peasant family may break away from these communities and acquire direct possession, perpetual and hereditary.

In short, the law is a distinct recognition of the individualistic tendencies of the mass of the peasants, coupled with a continued attempt to guard against any return to economic inequality in land possession. The new system of land taxation, which is markedly graduated in character, helps toward the same end of maintaining a social equilibrium.

Commerce.—During the first three quarters of 1922¹ the import trade of Soviet Russia, exclusive of contributed relief supplies, was valued (on the basis of 1913 price averages for the respective commodities) at 223,773,000 pre-war rubles; this compares with imports for the corresponding period of 1921, valued at 187,500,000 pre-war rubles. The exports for the first nine months of 1922 covered goods to the value of 53,700,000 pre-war rubles, in comparison with values for the 1921 period approximating 10,000,000 pre-war rubles.

The distribution of this foreign trade over the various months and quarters is shown in the following table:

MONTH, 1922	Quantities, long tons	Values, in gold rubles ²
IMPORTS		
January.....	63,400	11,034,000
February.....	67,700	11,954,000
March.....	158,700	16,462,000
April.....	249,800	38,410,000
May.....	293,900	40,596,000
June.....	239,400	34,445,000
July.....	200,000	24,351,000
August.....	236,900	22,439,000
September.....	168,500	24,082,000
Total.....	1,678,300	223,773,000
EXPORTS		
January.....	16,700	4,447,000
February.....	3,300	1,675,000
March.....	7,400	2,708,000
April.....	24,700	4,506,000
May.....	118,300	7,363,000
June.....	67,600	4,105,000
July.....	77,900	7,992,000
August.....	147,600	13,653,000
September.....	133,100	7,273,000
Total.....	596,600	53,722,000

¹ The Soviet Russian fiscal year ends 30 September. For analysis of the trade covering January-June, 1922, see "Commerce Reports," November 27, 1922, p. 561.

² Value of gold ruble = \$0.515.

According to *Economic Life* of 3 January, the value of imports for October was 24,652,000 gold rubles; of exports, 12,107,000 gold rubles.

The following comparison for two of Russia's principal purchasing markets shows the change in the character of commodities imported in 1912 and 1922, respectively:

COUNTRY OF ORIGIN	Millions of pre-war rubles, 1912	Millions of pre-war rubles, Jan.-Sept., 1922
Germany:		
Foodstuffs.....	39.8	6.8
Raw materials and semimanufactures.....	212.3	4.7
Manufactures.....	235.4	37.8
Total.....	487.5	49.3
Great Britain:		
Foodstuffs.....	14.0	5.6
Raw materials and semimanufactures.....	98.4	3.7
Manufactures.....	42.5	17.4
Total.....	154.9	26.7

In the House of Commons, on 27 Nov. 1922 the president of the Board of Trade gave out the following statement, showing the values of trade between the United Kingdom and Russia in the year 1921 and in the nine months ended 30 Sept. 1922:

ITEMS	Year 1921	January-September, 1922
Imports into the United Kingdom from Russia.....	£2,694,674	£3,189,898
Exports of produce and manufactures of the United Kingdom to Russia.....	2,181,007	2,756,022
Re-exports of foreign and colonial merchandise to Russia.....	1,210,283	622,894

Finance.—According to a report submitted by the Soviet delegation at The Hague the Government expenditures in 1921 totaled 16,700,000,000,000 rubles, and 16,375,000,000,000 of new currency were issued; thus 98 per cent of the budget was met by printing money. Revenue and expenditure of the Soviet Government in Russia, as stated in Soviet paper rubles, show, on the basis of official Russian reports, the following monthly changes during 1922 up to 1 Dec. 1922. The enormous increase in both revenue and expenditure is attributable to the exceedingly rapid depreciation of the paper ruble.

The monthly figures are as follows: each is in terms of millions of rubles—that is to say, the six last ciphers of each sum are omitted:

(000,000 omitted)			
	Revenue	Expenditure	Deficit
January....	1,166,000	13,771,000	12,005,000
February....	2,882,000	21,101,000	18,219,000
March.....	6,763,000	39,622,000	32,859,000
April.....	13,431,000	60,065,000	46,634,000
May.....	25,177,000	110,969,000	85,792,000
June.....	60,580,000	167,428,000	106,848,000
July.....	92,943,000	247,239,000	154,296,000
August.....	122,614,000	343,962,000	221,348,000
September...	195,411,000	412,977,000	217,566,000
October.....	205,949,000	510,074,000	304,123,000
November...	320,361,000	686,759,000	366,398,000
Total..	1,047,277,000	2,613,967,000	1,566,690,000

Railways.—The total rail mileage is placed at 34,000, much of it in bad condition and with defective rolling stock. The percentage of unsound locomotives had mounted at the end of May 1922 to 66 per cent (12,607 out of a total of 19,093), instead of the 16 to 18 per cent average of pre-war days and the 57 per cent of May, 1921. Matters were even worse with

freight cars; at the end of May, although 192,000 were counted under "operating stock" out of a total number of 392,000, there were so few cars left on the tracks fit for transporting any valuable cargo that, notwithstanding the closing of the seed and potato shipments, there was still a shortage of sound cars for moving freight from the ports.

Foreign Investments in Russia.—On the basis of statements by the Soviet Government, the *Economiste Européen* of Paris publishes the following calculation of capital invested in Russian industry by foreign countries prior to the war. The first column gives the amount actually invested, classified by countries from which the capital was sent. The second column gives the Soviet statement as to the portion of such investments which had been "nationalized" by the Soviet itself. The sums are in gold rubles, at the rate of 51 cents per ruble:

	Invested	Nationalized
France.....	731,746,600	648,089,700
England.....	507,479,800	500,563,500
Germany.....	441,593,200	317,475,500
Belgium.....	321,602,500	311,812,500
United States.....	117,750,000	117,750,000
Holland.....	35,486,700	30,456,700
Switzerland.....	33,479,100	31,606,700
Sweden.....	23,779,300	16,647,700
Denmark.....	14,737,700	14,537,700
Austria.....	7,550,000	5,900,000
Norway.....	2,300,000	2,300,000
Finland.....	2,000,000	2,000,000
Italy.....	2,106,200	2,106,200

Classified by industries in which such investments of capital had been made, the same statement shows that out of a total foreign industrial investment of 2,242,974,100,000 Soviet rubles, 834,320,100,000 was placed in the mining and metallurgical industry, 392,709,600,000 in metal-working establishments, 259,430,900,000 in city property and structures, 237,200,000,000 in banking establishments, 192,494,000,000 in the textile industry, and the rest, in smaller amounts, chiefly in chemical industry and general manufactures.

Defense.—On 12 Oct. 1922 at Moscow, War Minister Trotsky stated that the Red Army was then 800,000 strong. Two days later the Associated Press reported from the same city that Russia had 1,600,000 men under arms, mainly concentrated along the western frontier from the Baltic to the Black Sea. These figures, it was stated, were brought out in connection with the conference then being held by the Baltic states at Reval, in preparation for taking part in the Moscow disarmament congress proposed by the Russian Foreign Minister. The Soviet Army has about 10 squadrons of 15 battle planes each. The air service is reported as efficient as that of any other army. During the summer of 1922 the Government reorganized and rehabilitated the Black Sea fleet and also that in the Baltic. There are four battleships of the Dreadnought class, three older battleships, four battle cruisers, five armored cruisers, eight light cruisers, 80 destroyers, and 19 submarines. Several light cruisers are reported building in the Black Sea.

Government.—The Russian state is a free Socialist community of all the labor classes of

the country. To protect the conquests of the recent Revolution military service is universal. The highest authority in Russia is the all-Russian Congress of Soviets, made up of representatives of the town Soviets and of Provincial Congresses of Soviets. The Congress elects the Central Executive Committee of 300 members, in whose hands lie the supreme legislative, administrative, and controlling body of the State. This Central Committee forms a Council of People's Commissaries for the general administration. At a meeting of the newly-elected All-Russian Executive Committee, held in the Kremlin, Friday, 29 Dec. 1922 the following members of the Council of the People's Commissars were unanimously elected: President of the Council of Commissars, Nikolai Lenin; first vice-president, M. Rykov; second vice-president, M. Tsurupoff; third vice-president, Leo Kamenef; commissar for education, M. Lunacharsky; foreign trade, Leonid Krassin; finance, M. Sokolnikoff; nationalities, M. Stalin; labor, M. Schmidt; food, M. Brukhanoff; war and navy, Leon Trotzky; communications and interior, M. Djerjinsky; posts and telegraphs, M. Dvornalevsky; health, Dr. Semashko; foreign affairs, George Tchitcherin; justice, M. Kursky; Agriculture, M. Yakovenko; inspection of workers and peasants, M. Tsurupa; president of the Supreme Economic Council, M. Bogdanoff.

History.—The famine continued to occupy the front rank of national problems at the beginning of the year. Saratov was the worst famine district and here the American Relief Administration (q.v.) by January had organized so that it could at least save the children of this region. The situation became so serious that on 9 February the Soviet Government resolved to empower the Minister of Justice to seize the wealth of all religious bodies and sects for famine relief. This was the first attempt at the expropriation of the Church by the Soviets. Reports of terrible conditions in the Volga region continued to reach western Europe and America. The total number of famine-stricken was estimated at between 12,000,000 and 15,000,000. Typhus was decreasing and in many places had not been as bad as in 1919. Cholera had appeared in Kiev, Ekaterinoslav and Voronezh, and a new cholera epidemic was feared in the Spring. On 17 March a grant of £1,100,000 was made by the British Parliament for additional food relief to the Russian famine areas. Violence was threatened in many places to the Soviet collectors of church treasure and rioting occurred in Kasan and Shuja.

Politically the outstanding event of the year was the participation of the Soviet Government in the Genoa Conference. The delegation, headed by the Foreign Minister, George Tchitcherin, reached Riga on 29 March on the way to Genoa. There they discussed matters of common interest with delegates from the border states gathered for the Baltic Conference. The details of the Genoa Conference are dealt with in a separate article (q.v.). Perhaps the greatest result of the conference was the conclusion of the Russo-German Treaty of Rapallo, as a result of which the conference was almost broken up. This agreement was the first step toward a close

union between Russia and Germany, and diplomatic relations between these countries were resumed late in April. On 1 May a great review of the Red Army took place in Moscow under the walls of the Kremlin. Fully 100,000 troops marched in review before the Minister of War, followed by hundreds of thousands of workers of both sexes. The Minister of War, Trotsky, in his address, commented on the developments of the Genoa Conference. He declared the Allied nations insisted on conditions to which Russia would never yield. "We offered to disarm," he said "but the Allies did not want that. We offered to bargain, we offered to pay pre-war debts, but they declared that they would recognize us only if we abolished Soviet Russia and restored capitalism. We answered 'No' and will always answer 'No'!" The resistance of the Church to the requisition of church treasure continued throughout the spring and early summer. Several clergymen and laymen were tried and sentenced to death or to terms of imprisonment for opposition to the requisitioning. A formal order for the trial of the Russian Patriarch, Archbishop Tikhon, was issued on 6 May on the charge of opposing the requisitioning of church treasure for famine relief. A revolt in Georgia progressed through March and April to the point where it necessitated a strong offensive to suppress it. The Georgians sent a special mission to Genoa to voice their grievances and their position was stated to one of the commissions. When the Genoa Conference came to an end, M. Tchitcherin remained together with M. Rakowski to bring about the negotiations for a trade treaty with Italy. This was successfully accomplished. The other Russian delegates departed for Berlin there to complete arrangements under the Rapallo Treaty for German aid in the economic reconstruction of Russia. Several plans to operate through syndicates were announced in May. One result of the Genoa Conference was the withdrawal by the Soviet Government of its troop concentration on the frontiers of Bessarabia, caused by the request of Rumania at the conference and especially by the guarantee of France to Rumania of her possession of Bessarabia. The struggle with the Church went on with the greatest bitterness. Early in May 12 priests were condemned to death for opposing the requisitions of treasure. Tikhon, the Patriarch, was forced to resign by a committee of clergy headed by Bishop Antonin, who were in league with the authorities. Tikhon announced his resignation on 17 May and at once returned to private life. Pope Pius XI protested on 26 May to the Moscow Government against the prosecution of the Patriarch, and a protest was also sent by some members of the Church of England. The reply of Lenin on 7 June affirmed the purpose of the government to prosecute Tikhon and other ecclesiastics for their resistance to measures aimed to save the lives of millions, and declared that Tikhon and his followers had always worked with Tsardom and the nobility. About this time reports reached the outside world of the rifling of the tombs of Russia's ancient rulers. Scores of protests were made against this desecration of the tombs of the Tsars but without avail. On 8 June the Social Revolutionary trial got under way in Moscow. Several men had been accused

of conspiracy to murder the more prominent Soviet leaders. The great international Socialist leaders were engaged as counsel for the accused. The first session was very stormy. New property rights within certain limits were recognized by a decree early in June and marked a partial return to the capitalist system. Lenin was stricken with apoplexy and for many days his condition was serious. He retired to the country to recuperate. On 4 June a chapter of Russian history was closed in the United States when Boris Bakhmetieff, Kerenski's ambassador to the United States, submitted his resignation to Secretary of State Hughes. The trial of the Social Revolutionaries came to an end on 7 August with the condemnation to death of a main group charged with counter-revolution and long terms of imprisonment for the others. On the following day the death sentences were suspended on condition that all anti-Bolshevik activity should cease. The determination of the Government to stamp out all opposition at home was evidenced by the wholesale arrests of intellectuals which were taking place in all parts of Russia during the summer months. Many well-known university professors, persons suspected of Monarchist tendencies, or anti-Soviet in their political views, the lawyers who defended the Social Revolutionaries at their trial, were included. In all about 2,000 intellectuals were to be exiled. On 1 September official figures showed that Soviet Russia, operating through the dreaded Cheka (Secret Police) had caused more people to be killed than all Russia lost during the World War. According to the figures published the Cheka executed 1,766,118 persons, including 6,775 professors, 8,800 physicians, 355,250 other intellectuals, 1,243 priests, 54,650 officers, 200,000 soldiers, 50,000 policemen, 12,950 workmen and 815,100 peasants. Both in Germany and in Russia there was great disappointment of hopes reposed in the famed Rapallo Treaty. The Commission of Commerce and Marine of the American Bankers' Association issued a pamphlet on 21 August marshaling exhaustive evidence to show that conditions in Russia were at that time wholly unfavorable for the resumption of commercial relations. In view to such resumption the Washington administration authorized Ambassador Houghton at Berlin to inquire of Krassin and Tchitcherin there whether the Soviet Government would sanction the admission of an American Technical Commission to study the present economic condition of Russia. Krassin's answer was in the affirmative on condition that Russia be allowed to send a similar commission to the United States. This reply was unsatisfactory to Washington.

Early in October Lenin returned to active participation in the affairs of the Soviet Government. Three problems faced him: how to encourage foreign investments, how to improve the economic situation, and how to protect Russian interests in the Near East. One of his first official acts was to impose his veto against the ratification of the Urquhart Agreement—the agreement negotiated by Leonid Krassin with the Russo-Asiatic Consolidated, Limited, controlled by the Urquhart interests—for the return of their mining properties in Siberia. Lenin vetoed this agreement on the ground that the economic advantage to Russia was debatable

and politically it was futile because of the attitude of Great Britain in the Near East. The agreement, signed 10 September, provided for the complete restitution of the English corporation's properties with compensation for confiscations made by the Soviets, the total claims aggregating \$280,000,000. The land to be returned covered 2,500,000 acres and a new 99-year lease was to be granted by the central Soviet Government. M. Litvinov stated the veto of the Urquhart agreement was caused by the pronounced hostility of Great Britain in the Near East question. Russia was very anxious to be admitted to the Near East Conference. On 15 September the Moscow Government sent a strong note to the British High Commissioner at Constantinople protesting at the Allied control of the Turkish capital, and, more especially, of the Straits, "irrespective of and to the injury of the rights of Turkey, Russia, the Ukraine and Georgia, which are vitally interested in free communication between the Black Sea and the Mediterranean." Further, the note demanded the return of Constantinople to the Turks, "whose victorious struggle for freedom Russia warmly salutes and supports." From this note it was evident that the Russian government voiced the traditional policy of old Russia for an outlet to the sea. They further emphasized the rights given them under the treaty concluded with Turkey in 1921 and openly proclaimed their sympathy with the Turkish cause as opposed to British policy in the Near East. On 26 September Moscow sent another note, addressed to England, France, Greece, Italy, Rumania, Yugoslavia, Egypt and Bulgaria, proposing a general conference to settle the Near East situation, especially the disposition of the Straits, and declaring that Russia would refuse to recognize any decision in which the Russians were not allowed a voice, and denouncing Great Britain's "usurpation" of the Straits. Another note was sent to Great Britain, Italy and France on 1 October protesting against the Allied blockade of the Black Sea, and asserting the right of Russia to representation at the Mudania Conference. Mustapha Kemal, the Turkish Nationalist leader, in his reply to the Allied representatives on 5 October, supported the Russian contentions. In a letter to the Congress of Trade Unions on 19 September Lenin stated that the refusal of the capitalistic states to give Russia credit was hampering the restoration of industry, but that the insistence of the foreign powers on the restoration of private ownership in Russia would prove futile. The expectation of a large grain surplus from the harvest did not materialize, and at the approach of winter there was much cause for disquiet. In the autumn the deportation of the intellectuals was carried out ruthlessly, while trials and executions for counter-revolutionary activity were occurring at various places. The expropriation of the Church treasures gave rise to a schism. The new church group headed by Antonin termed their church "The Resurrection Church" and looked on the old church as "The Dead Church." The latter, however, was by no means dead, and still retained its old place in the hearts of the common people. The Resurrection Church was itself split by schism, when a new organization, headed by M. Novakoff, was

formed on 11 October. This cult sought a reversion to the practices of the early Christians.

The fifth anniversary of the Bolshevik revolution of 7 Nov. 1917 was celebrated with great éclat in Petrograd on 5 November and in Moscow on 8 November. The Moscow celebration was in the nature of a welcome to the delegates of the Congress of the Third International. The whole city was ablaze with crimson flags. Trotsky, the War Minister, addressed the crowds, declaring that Russia had a big army and a good army, but that she was ready to disarm if other nations disarmed. A review of 20,000 men then took place with the Communist youths, sailors and cadets in the procession. Foreign observers were impressed with this striking evidence of Russia's strength and vital spirit after five years of Soviet rule.

There was but slight change in the political situation during the autumn. Russia continued to insist on admission to the Lausanne Conference on equal terms with the Allied nations and Turkey, and late in October sent a note to the British Government complaining of the failure of the latter to reply to several notes upon this subject of such vital importance to Russia. There was a curious rapprochement between Russia and France, the first indication of which was an arrangement concluded in October for the admission of a Russian Red Cross mission to France to supervise the repatriation from France of former Russian soldiers. The second was the sending of a French economic mission to Moscow headed by Eduard Herriot, Mayor of Lyons and leader of the Radical Socialist Party. The mission returned to Paris on 16 October and was enthusiastically received by officials and by the press of the capital. M. Herriot declared the moment was favorable for a resumption of relations with Russia. He said that Russia's claims regarding the Turkish Straits must be considered and Russia must be helped in reconstruction and given an opportunity to pay her debt.

The Congress of the Third International met in Moscow early in November and opened with the pageant and review incident to the fifth anniversary celebration of the Bolshevik regime. On 13 November Premier Lenin addressed the delegates from the dais in the great throne-room of the Kremlin, explaining why Russia had abandoned its revolutionary system, had rejected Communist principles and reverted to state capitalism. He said that the government had started transformation too fast, without the backing of sufficient force, and had become like an army that had gotten too far in advance of its base. In order to retain power the Communist majority had to satisfy the peasants and the small bourgeoisie that comprise the vast numerical majority of the country, and who were protesting against the system imposed by the Communists. Therefore, small industry and commerce were permitted to be created privately, though great industry was still backward. For this latter money was needed, at least 100,000,000 gold roubles, and but 20,000,000 gold roubles were available. To maintain the success of the Red revolution, he said that the proletariat class must retain power by remaining masters of the capitalism that is given admission. The land of

Russia still belongs to the state and the basic industries are in the hands of the state. Where mixed companies are formed, "half state and half foreign or native capitalists, the state retains control of them and after using them to acquire commercial knowledge, can dissolve them at will. Thus there is no danger in close association with the capitalist enemy." In the meantime, the Premier advocated the most rigid economy even in such branches as education, which the state was most anxious to develop—from political understanding down to the simple knowledge of how to read and write. Through education Soviet theories are to be extended and expansion forced so that capitalist countries and their peoples may know what a proletarian revolution really means.

Early in November the change in the national title from "Russian Socialist Federated Republic" to the "Allied Soviet Republics" took place, when the All-Russian Soviet Executive adopted a resolution, introduced by the Ukrainian Soviet Government, providing for a "centralized organization of the Allied Soviet Republic," doing away with the illusion of independence and autonomy, with which the various federated republics had been labeled. The change necessitated new supplementary treaties between Soviet Russia, Soviet Ukraine, Soviet White Russia, the Transcaucasian Republic, and the late Far East Republic. The last named state decided to abolish itself on 17 November and join the Moscow Soviet, and selected 15 delegates to the all-Russian Red Congress. As a consequence, the diplomatic negotiations pending between China and Japan had to be resumed with the central government at Moscow. Under the new system the Moscow Government alone deals with all matters relating to foreign affairs, the army, navy, economic life and finances of all units that had comprised the old Federation. The Central Executive Committee, to which a number of representatives of the former "independent" states are admitted, acts as the "Supreme Government Executive Organ." The former "independent" federated republics are permitted independent administration merely of their "national cultural needs"—education and social welfare.

On 2 December the Disarmament Conference between Russia and the Border States was opened in Moscow. Maxim Litvinov, chairman of the Russian delegation, surprised the assembly by his proposal (1) to reduce the Russian army to 200,000 men in the next 18 months, provided the border states agreed to proportionate reductions; (2) to limit strictly military budgets to a certain sum per soldier; (3) to establish a zone of neutralization on the frontiers between Russia and her neighbors in order to prevent the recurrence of frontier clashes which in the past have constituted a grave menace to peace. He added that Russia regretted being unable to make proposals for naval limitations, but that the Russian fleet was already reduced to one-quarter of its 1917 strength. Latvia and Lithuania agreed in principle to the proposal, as did Finland. The delegates from the last named pointed out that the inequality of Russia and her neighbors in size rendered the scheme for the reduction of armies extremely difficult. They advised therefore the establishing of a joint arbitra-

tion board to settle all disputes. By 8 December the conference had settled practically all the clauses of the proposed treaty. Territorial questions were expressly excluded at the instance of the Polish delegation. It was also admitted by Moscow that Poland because of the difficulty of her position between Germany and Russia could not readily accept the full disarmament program.

At the end of the year plans for a new trade ministry were under way. The Russian banks also were extending their operations abroad through European and Russian banking houses. On 22 November, at Paris, the "Supreme Council of Russian Monarchists" completed a five-day session in the course of which Grand Duke Nicholas was elected successor to the late Tsar, Nicholas II. On 12 March 1923 it was officially announced at Moscow that Lenin had suffered another stroke. It was evident that his condition was regarded as critical.

Several clergymen of the Roman Catholic Church, including Archbishop Zepliak and his Vicar-General Mgr. Butchkawiez, were placed on trial at Moscow during Holy Week, were found guilty of teaching and preaching in defiance of the Soviet law, and the archbishop and vicar-general were sentenced to death. Strong representations were made by churches, governments and societies against the carrying out of the sentences, with the result that the sentence of Archbishop Zepliak was commuted to imprisonment, but Vicar-General Butchkawiez was executed 31 March. The execution caused a revulsion of feeling throughout the world against the Soviet system. The protestations alarmed the Soviet leaders, who began to think that they had overreached themselves. On 1 May 1923 it was reported that the panicky actions of the Bolshevik leaders were due to the death of Lenin. It was said that his death was being kept secret lest an uprising occur among the populace.

RUSSO-GERMAN TREATY. See PEACE AND ARBITRATION, INTERNATIONAL; REPARATIONS.

RUST COLLEGE, a Methodist Episcopal co-educational institution for colored students, founded in 1866 and located at Holly Springs, Miss. In 1922-23 it had a faculty of 27 members, 476 students, property valued at \$225,000, and an income of \$50,000. M. S. Davage, is president.

RUTGERS COLLEGE, and the State University of New Jersey, an educational institution, founded in 1766 and located at New Brunswick, N. J. The college is for men but as part of the university there is the New Jersey College for Women, with different grounds and buildings. In 1922-23 it had a faculty of 98 members, a student enrollment of 800 in college, and 2,700 in the university. The institution's property was valued at \$2,000,000, and its income amounted to approximately \$600,000. W. H. S. Demarest, D.D., LL.D., is president.

RYE. The rye crop of the United States in 1922 was estimated by the Department of Agriculture at 95,497,000 bushels valued at \$66,085,000, as compared with the 1921 crop of 61,675,000 bushels valued at \$43,014,000 and the 1920 crop of 60,490,000 bushels valued at \$76,693,000.

The acreage for the three years was as follows: 1922, 6,210,000; 1921, 4,528,000; 1920, 4,409,000. The average yield per acre during the three years mentioned was 15.4 bushels in 1922, 13.6 bushels in 1921 and 13.7 bushels in 1920. The average price on 1 December was 69.2 cents per bushel in 1922, 69.7 cents per bushel in 1921 and \$1.45 per bushel in 1920. Production in bushels in the leading rye-growing States in 1922 was as follows: North Dakota, 24,506,000; Minnesota, 21,926,000; Michigan, 8,294,000; South Dakota, 7,902,000; Wisconsin, 7,139,000; Illinois, 4,096,000; Indiana, 3,816,000; Pennsylvania, 3,740,000.

The world rye crop in 1922 was estimated by the United States Department of Agriculture as 770,152,000 bushels produced in 18 countries, figures for which were available. The same countries in 1921 produced 770,603,000 bushels. No statistics, it was stated, were available for Russia, Austria, Denmark, Greece, Norway and most of the countries of the southern hemisphere. The German rye crop of 1922 was estimated by the International Institute of Agriculture at Rome at approximately 210,580,000 bushels or 57,070,000 bushels less than the 1921 crop. France's rye crop was placed at 37,600,000 bushels, compared with 44,392,000 bushels in 1921. An unofficial estimate placed the rye crop of Yugoslavia at 7,090,000 bushels, an increase over the 1921 crop of 5,770,000 bushels.

RYERSON, Edwin Warner, American surgeon: b. New York, N. Y., 14 March 1872. In 1897 he was graduated with the degree of M.D. at Harvard University and in 1897-98 was house surgeon at the Boston Children's Hospital. Thereafter he made postgraduate studies in Berlin and Vienna. Dr. Ryerson has been in practice in Chicago since 1899. He is orthopedic surgeon of the Presbyterian and Children's Memorial hospitals and of the Home for Destitute Crippled Children. He is also associate professor of surgery at Rush Medical College. In February 1911, Dr. Ryerson was appointed first lieutenant in the Medical Reserve Corps and was advanced to the rank of captain in July 1917. From 27 Aug. 1917 to 7 Aug. 1919 he was major in the Medical Corps of the United States Army. Dr. Ryerson is member of the American Medical Association, of the American Orthopedic Asso-

ciation, of the Chicago Medical Society, the Chicago Orthopedic Society and fellow of the American College of Surgeons.

RYLAND, Robert Knight, American artist: b. Grenada, Miss., 10 Feb. 1873. In 1892 he was graduated at Bethel College, Kentucky, with the degree of A.B. From 1894-1900 he studied at the National Academy of Design and at the Art Students' League, New York. He was awarded the Lazarus scholarship for mural painting, spending the years 1903-05 in Rome. From 1908 to 1919 he was instructor in drawing at Cooper Union, New York City. Mr. Ryland is member of the Architectural League of New York and of the American Society of Mural Painters.

RYNEARSON, Edward, American educator: b. near Farmland, Ind., 23 June 1867. He was educated at Ohio Wesleyan University from which he was graduated with the degree of A.B. in 1893, receiving the degree A.M. therefrom three years later and the degree D.Ped. in 1919. In 1895-96 he studied biology at the University of Chicago. Dr. Ryneerson spent seven summers at the Marine Biological Laboratory at Woods Hole, Mass., and one summer at the Columbia University. In 1893-95, Dr. Ryneerson was teacher of biology at Steele High School, Dayton, Ohio; from 1896-98 professor of biology at Central High School, Pittsburgh; head of academic department of Pittsburgh High School from 1898-1902 and director of the high schools of Pittsburgh from 1902-12. Since 1912 he has been principal of the Fifth Avenue High School of Pittsburgh and since 1917 has been director of vocational guidance. In 1908 he was sent by the Board of Education of Pittsburgh to visit the schools of Great Britain and the Continent. Dr. Ryneerson is member of the National Society for the Study of Education, of the National Education Association, of the Pennsylvania State Teachers Association, of the Pittsburgh Academy of Science and Art and of the National Association for Vocational Guidance, serving as president of the last-named in 1922. He has published: 'Wild Animals Pittsburghers Should Know' (1901); and collaborated in 'Elementary Lessons' and 'Laboratory Manual' in science.

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SACRED HEART, College and Academy of the, a Catholic educational institution for women, founded in 1869 and located at Cincinnati, Ohio. In 1922-23 it had a faculty of 15 members, 132 students, and property valued at \$500,000. Rev. Mother Mary Nolan, A. M., is president.

SACRED HEART, College of the, a Roman Catholic educational institution for women, located in Manhattanville, New York City. It was incorporated as an academy in 1847, and as a college in 1917. In 1922-23 the faculty numbered 17 and the student body 124. No statistics regarding the property value and income were available. Madam Ruth Burnett is president.

SAILPLANE. See AERONAUTICS.

SAINT ANSELM'S COLLEGE, a Catholic educational institution for men, founded in 1889 and located at Manchester, N. H. In 1922-23 it had a faculty of 14 members, and an enrollment of 100 students. Information not available as to the value of institution's property or its income. Rt. Rev. Abbott Ernest, D.D., O.S.B., is president.

SAINT BENEDICT'S COLLEGE, a Catholic educational institution for men, founded in 1858 and located at Atchison, Kan. In 1922-23 it had a faculty of 31 members, 370 students, and property valued at \$630,000. Income figures not given. Rt. Rev. Martin Veth, O.S.B., S.T.L., LL.D., is president.

SAINT BERNARD COLLEGE, a Roman Catholic educational institution for men, founded in 1892 and located at Saint Bernard, Ala. In 1922-23 it had a faculty of 26 members, and a student enrollment of 160. Value of the institution's property and its income not given. Rt. Rev. Bernard Menges, O.S.B., is president.

SAINT BONAVENTURE'S COLLEGE AND SEMINARY, a Roman Catholic educational institution for men, founded in 1856 and located at Saint Bonaventure, N. Y. In 1922-23 it had a faculty of 35 members, 570 students, and property valued at \$1,500,000. Income figures not given. Very Rev. Thomas Plassmann, O.T.M., is president.

SAINT CATHERINE, College of, a Roman Catholic educational institution for women, founded as a senior college in 1911 and located at Saint Paul, Minn. In 1922-23 it had a faculty of 35 members, 318 students, property valued at \$735,000 and an income of \$139,000. Sister Antonia, A.M., is president.

SAINT ELIZABETH, College of, a Catholic educational institution for women located at Convent Station, N. J. It was founded 29 May 1900. Statistics for the scholastic year 1922-23 show a faculty of 36 members with a student enrollment of 215, and property valued at \$828,780. Income figures for the year are not available; the income during

1921-22 was \$114,107.75. Sister Marie José Byrne is dean.

SAINT GREGORY'S COLLEGE, formerly the Catholic University of Oklahoma, an educational institution for young men and boys, founded in 1915 and located at Shawnee, Okla. In 1922-23 it had a faculty of 12 members, 125 students, property valued at \$400,000 and an income approximately \$30,000. Rev. D. Blaise, O.S.B., is president.

SAINT HELENA, a volcanic island of the South Atlantic, 1,200 miles from the west coast of Africa. Its area is 47 square miles and in 1921 it had a population of 3,747. The island belongs to Great Britain and is famous as the place of exile of Napoleon Bonaparte. The capital is Jamestown. In 1920 the island revenue was £13,126 and the expenditure £12,175. Exports the same year were valued at £41,857 and imports at £67,441. The Governor in 1922 was Col. R. F. Peel.

SAINT IGNATIUS COLLEGE, a Catholic educational institution for men, founded in 1855 and located at San Francisco, Calif. In 1922-23 it had a faculty of 24 members, and 230 students. Information regarding valuation of property and income not given. Rev. Pius L. Moore, S.J., is president.

SAINT JOHN'S COLLEGE, a non-sectarian educational institution for men, founded in 1696 and located at Annapolis, Md. In 1922-23 it had a faculty of 17 members, 202 students, property valued at \$700,000 and an income of \$90,000. Thomas Fell, Ph.D., LL.D., L.H.D., D.C.T., is president.

SAINT JOHN'S UNIVERSITY, a Catholic educational institution for men, founded in 1857 and located at Collegeville, Minn. In 1922-23 it had a faculty of 38 members, 462 students, property valued at \$1,125,000 and an income of \$225,000. Rt. Rev. Alcuin Deutsch, is president.

SAINT JOHN'S UNIVERSITY, a Catholic educational institution for men, founded in 1898 and located at Toledo, Ohio. In 1922-23 it had a faculty of 34 members, 313 students, and property valued at \$499,000. Income figures not given. Rev. Francis X. Busch, S.J., is president.

SAINT JOSEPH'S COLLEGE, a Roman Catholic educational institution for men, founded 1851; chartered 1852, and located at Philadelphia, Pa. In 1922-23 it had a faculty of 18 members and a student enrollment of 116 in college, and 602 in high school. Value of institution's property and its income not given. Rev. Albert G. Brown, S.J., is president.

SAINT KITTS, NEVIS AND SAINT CHRISTOPHER. See LEEWARD ISLANDS.

SAINT LAWRENCE CANAL. See PEACE AND ARBITRATION, INTERNATIONAL; CANALS.

SAINT LAWRENCE UNIVERSITY, a non-sectarian, co-educational institution, founded in 1856 and located at Canton, N. Y. In 1922-23 it had a faculty of 69 members (including the Brooklyn Law School), and a student enrollment of 1,656. Valuation of the institution's property and its income for 1922-23 were not available, but in 1922 its property was valued at \$513,506 and its income was \$60,561. Richard Eddy Sykes, D.D., is president.

SAINT LOUIS UNIVERSITY, an educational institution founded in 1818 and located in Saint Louis, Mo. It is non-sectarian but under Catholic management. The law, and commerce and finance courses are open to women, the other courses are for men only. Statistics for 1922-23 show a faculty of 245 members, 3,264 students, property valued at \$3,000,000 and an income of \$450,000. Very Rev. William F. Robison, S.J., is president.

SAINT MARY-OF-THE-WOODS COLLEGE, a Roman Catholic educational institution for women, founded as an Academy 1846, and as a College in 1909, and located at Saint Mary-of-the-Woods, Ind. In 1922-23 it had a faculty of 35 members; 170 students. No figures are given as to its property valuation or its income. Mother M. Cleophas is president.

SAINT MARY'S COLLEGE, a Roman Catholic educational institution for men, founded in 1863 and located at Oakland, Calif. In 1922-23 it had a faculty of 28 members, 489 students, and property valued at \$750,000. Income figures not given. Brother Vantasian is president.

SAINT MARY'S COLLEGE, a Roman Catholic educational institution for men, founded in 1848 and located at Saint Mary's Kan. In 1922-23 the faculty numbered 36 and the student body 490. The value of the institution's property and its income for the year were not available. Rev. B. J. Rodman, S.J., is president.

SAINT MARY'S COLLEGE, a Roman Catholic educational institution for men, located at Saint Mary, Ky. It was founded in 1821. Statistics for 1922-23 show a faculty of 10 members, a student enrollment of 125, property valued at \$200,000 and an income totaling \$57,000. Rev. Michael Jaglowicz, C.R., is president.

SAINT MARY'S COLLEGE AND ACADEMY, a Catholic educational institution for women, founded 10 Nov. 1845 and located at Monroe, Mich. In 1922-23 it had a faculty of 30 members, 350 students, and property valued at \$500,000. Income not given. Mother M. Domitilla is president.

SAINT MARY'S COLLEGE AND ACADEMY, a Catholic educational institution for women, founded in 1855 and located at Notre Dame, Ind. In 1922-23 it had a faculty of 53 members, 345 students, property valued at \$1,077,580 and an income of \$208,221.85. Mother M. Pauline is president.

SAINT MARY'S COLLEGE AND ACADEMY, a Roman Catholic educational institution for women, founded in 1872 and located at Prairie du Chien, Wis. In 1922-23 it had a faculty of 16 members and a student enrollment of 109. Value of institution's property

and its income not given. Mother M. Angela is president.

SAINT MICHAEL'S COLLEGE, a Catholic educational institution for men, founded in 1905 and located at Winooski Park, Vt. In 1922-23 it had a faculty of 15 members, and 175 students. Information regarding valuation of property and income not given. Very Rev. William Jeanmarie, S.S.E., is president.

SAINT OLAF COLLEGE, a Lutheran co-educational institution, founded in 1874 and located at Northfield, Minn. In 1922-23 it had a faculty of 60 members, 928 students in collegiate grade, property valued at \$963,008.24 as of 30 April 1922, and a net income of \$186,068.46 for the eight months ending 30 Dec. 1922. L. W. Boe, D.D., is president.

SAINT PETER'S COLLEGE, a Roman Catholic educational institution for men, chartered in 1872 and opened in 1878. It is located at Jersey City, N. J. In 1922-23 it had a faculty of 25 members and 715 students. Information was not available regarding the value of the institution's property or its income. Rev. T. F. Graham, S.J., is president.

SAINT PIERRE AND MIQUELON, the largest islands of two small groups off the south coast of Newfoundland and belonging to France. The Saint Pierre group has an area of 10 square miles and a population of 3,419; the Miquelon group has an area of 83 square miles and a population of 499. Cod-fishing is an important industry. In 1922, the islands acquired some unenviable notoriety — from its being then a supply station for smugglers of liquors, who purchased their liquors there and thereafter brought them to the United States. The New York *Herald* exposed the operations of the rum runners and their aides. Imports, other than liquors, are textiles, salt, food stuffs and meat. The local budget in 1921 was balanced at 1,818,383 francs. The expenditure of France the same year was 280,607 francs. Saint Pierre is the chief town.

SAINT STEPHEN'S COLLEGE, an Episcopal educational institution for men, founded in 1860 and located at Annandale-on-Hudson, N. Y. In 1922-23 it had a faculty of 15 members, 103 students, property valued at \$875,000 and an income of \$92,000. Bernard Iddings Bell, D.D., is president.

SAINT TERESA, College of, a Roman Catholic educational institution for women, founded in 1911 and located at Winona, Minn. In 1922-23 it had a faculty of 36 members, 511 students, and property valued at \$2,000,000. No income figures given. President, Mother M. Leo Tracy.

SAINT VIATOR COLLEGE, a Roman Catholic educational institution for men, founded in 1868 and located at Bourbonnais, Ill. In 1922-23 it had a faculty of 30 members, 372 students enrolled up to January, property valued at \$354,984.84 and an income of \$168,057.58. Rev. Terence J. Rice, C.S.V., is president.

SAINT VINCENT COLLEGE AND ECCLESIASTICAL SEMINARY, a Catholic educational institution for men, founded in

1846 and located at Beatty P. O., Latrobe Station, Pa. In 1922-23 it had a faculty of 47 members, 575 students and property valued at \$1,000,000. Income figures not given. Rt. Rev. Aurelius Stehle, O.S.B., D.D., is president.

SAINT XAVIER COLLEGE, a Catholic co-educational institution, founded in 1831 and located at Evanston Station, Cincinnati, Ohio. In 1922-23 it had a faculty of 118 members, 1,526 students, property valued at \$1,250,000, and an income of \$75,000. James McCabe, S.J., is president.

SAINT XAVIER COLLEGE FOR WOMEN, a Roman Catholic educational institution the academic department of which was founded in 1847, and the college in 1912. It is located at Chicago, Ill., and in 1922-23 had a faculty of 15 members, 120 students, property valued at \$957,000 and an income of \$125,000. Reversed Mother M. Sophia is president.

SAKHALIN, an island off the east coast of Siberia, of which the part north of the 50th parallel belongs to Russia and the southern part to Japan. The area of the island is 27,816 square miles and it is about equally divided by the 50th parallel. The population numbers 138,000, of whom 105,765 are in Karafuto, the Japanese section. During the post-war period the occupation of the Russian part of the island by the Japanese was the cause of much recrimination. The Far East Republic requested the withdrawal of the Japanese several times during 1921 and at the Washington Disarmament Conference the question was discussed. Japan in 1922 decided to withdraw her troops and after the absorption of the Chita government by the All Russian Soviet of Moscow late in the year this withdrawal was accomplished peacefully.

SALE, George Samuel, British university professor: b. Rugby, England, 1831; d. London, 25 Dec. 1922. He was educated at Rugby School, where his father was a master under Arnold. In 1850 he entered Trinity College, Cambridge, with a Rugby exhibition. He took his B.A. degree in 1854 (M.A., 1857), and, having attained a Fellowship, was, in 1858, appointed a classical lecturer. In 1860, his health having broken down, he, on the advice of the late Sir Henry Holland, settled in New Zealand, and took up sheep-farming in Canterbury. Later he became editor of *The Press*, now perhaps the leading journal in New Zealand. After nine months as editor he took up gold mining. In 1869 when Westland became a separate province, he returned to England and entered at Lincoln's Inn with the intention of being called to the Bar. But his destinies were bound up with those of the young colony. In 1870 the University of Otago was founded, chiefly through the enterprise of the Presbyterian community, and Sale was appointed to the combined Chairs of Classics and English literature, which he held until 1908. During his long tenure of his position Sale was undoubtedly the most potent influence in the academic life of New Zealand. Over generations of students he exercised a powerful influence. In 1874 he took a leading part in the negotiations which led to the reconstruction of the university system of New Zealand.

SALEM ACADEMY AND COLLEGE, an educational institution for women, founded in 1772 and located at Winston-Salem, N. C. Though founded by the Moravians it is self owned and inter-denominational. In 1922-23 it had a faculty of 64 members, 409 students (249 in the college and 160 in the academy), property valued at \$535,000, and a gross income of \$188,000. Howard E. Rondthaler, Ph.D., D.D., is president.

SALEM COLLEGE, a co-educational institution under the auspices of the Seventh Day Baptists, founded in 1888 and located at Salem, W. Va. In 1922-23 it had a faculty of 24 members and in January 1923 it had a student enrollment of 457 which included about 130 in extension classes. Its property is valued at \$270,000, and its income is approximately \$45,000. S. Orestes Bond, A.M., is president.

SALVADOR, a republic of Central America on the Pacific Coast, having an area of 34,155 square kilometers, or 13,183 square miles, and a population of 1,501,000 on 1 Jan. 1922. The capital is San Salvador, which has 80,756 inhabitants. The capital and surrounding districts suffer much from earthquakes; those of 1917 and 1919 nearly destroyed the capital and also Nejapa, Quetzaltepeque, and Armenia.

Religion, Education, etc.—Roman Catholicism is the prevailing religion but all denominations are in full enjoyment of religious liberty. Primary education is free and compulsory. There are in the Republic 805 primary elementary schools with 1,613 teachers and 49,406 pupils. Secondary schools number 27 with 2,345 pupils. There is a national university at the capital with the usual faculties. Judges of all courts of second and third instance are elected by the National Assembly for a term of two years and judges of first instance are selected by the supreme court for two years.

Finance.—Revenue for the fiscal year 1921-22 amounted to \$8,965,000 and expenditures were slightly less than this amount. The outstanding debt of the Republic amounts to 29,232,313 colonies, about equally divided between internal and external debts.

Production and Industry.—Agriculture and mining contribute most largely to the wealth of the Republic; there are many native industries including the weaving of cotton textiles. Silk is also made and woven. Saddles, shoes and other leather goods are made and tobacco and cigars are manufactured from native tobacco. The great products of the country are coffee, which leads in the amount and value among national exports, gold, silver, indigo, sugar, rubber, and hides and balsam are among the staple products of the Republic. There are about 100,000,000 coffee trees on 183,332 acres. Live stock is raised. The forests include such woods as cedar, mahogany and walnut.

Commerce.—In 1920 the foreign commerce of Salvador was valued at \$30,000,000 but the following year a decline set in which continued also in 1922 although to a less extent. The trade of the Republic is largely with the United States, the United Kingdom and France. Coffee exports total about 65,000,000 pounds. The vessels entered at the ports of the Republic in 1920 numbered 520 with a total tonnage of 657,396.

There are 213 miles of railway all of narrow gauge. Good roads are numerous, the total mileage of improved roads being 1,476 miles. There are 162 post-offices, 22 telegraph offices and 220 telephone offices. There are three wireless stations.

Government.—The executive is a president elected for four years. The legislative power is vested in a single chamber of 42 deputies, three from each department of the Republic. Deputies are elected by universal suffrage for terms of one year. The President in 1922 was Senor Don Jorge Melendez. He is assisted by a cabinet of four ministers.

History.—On 17 March 1922 there was opened to traffic the railway between Cojutepaque and San Salvador, this being a new link in the International Railway of Central America, which in turn forms part of the Pan American Railway. On 23 March Salvador declared a period of mourning, and gave the military funeral rites of a general to the late Baltazar Estupinian, Minister of Government, Promotion and Agriculture. On 26 April the President signed a legislative decree ratifying the Pan American postal conventions which originated in the Congress of Buenos Aires in 1921. On 24 May the National Assembly ratified the Hague International Opium Convention and final protocol, and on 29 May the President signed the decree. In June hundreds of persons were drowned in river floods, the severity of which was greatest about the 11th and 12th, and then, contrasting with the storms, there was prolonged drought, injuring or destroying the crops. On 30 June Royal Spanish decorations, conferred by King Alfonso upon President Meléndez, the vice-president and others prominent in the government, were presented in the National Palace by Viscount de Pegullal, envoy of Spain, in recognition of Ibero-American activities and understanding. About the same time the Post-office Department announced resumption of the postal money order service between Salvador and Germany, which had been discontinued during the war. And again, about the same time, a central flood-relief committee was appointed by the President to handle the funds contributed by the government, by the American Red Cross, by individuals, and the governments of several of the Central American states, for the relief of suffering occasioned by the San Salvador flood above mentioned. The Salvadorean Red Cross aided in supplying food and providing shelter. Finally, the record of the year includes the important work (under the Rockefeller Foundation) of Dr. Robert Archibald Lambert, who gave a course of lectures in pathology at the San Salvador Medical School. Doctor Lambert, who was at that time assistant professor of pathology and bacteriology in the School of Medicine at Yale, made a survey of the medical schools of Salvador, Guatemala, and Nicaragua, to obtain accurate knowledge of the present standards of medical education in Central America. See also CENTRAL AMERICAN CONFERENCE.

SALVATION ARMY, The, a religious and charitable corporation, its parent charter in America having been taken out under the laws of the State of New York. Its origin took place in the East end of London, England, in the year

1865, where its founder, the Rev. William Booth, carried forward an evangelistic campaign with the avowed purpose of reaching the unchurched masses. The effort proved to be very successful and resulted in a permanent organization which rapidly developed a military form of government, but it was not until late in the seventies that the name was changed from The Christian Mission to The Salvation Army.

Though the growth of the movement until then had been exceptional, it now became phenomenal and it rapidly spread into many of the countries of the world. The United States of America was "invaded" in the year 1879 and to-day the Army has representation in no less than 76 different countries and colonies. Its officers, or those wholly engaged in its work, number over 25,000 of which 3,940 are in the United States. Its corps and outposts throughout the world reach the total of 12,211, 10 per cent of this number being in the United States.

In addition to these corps or stations there are a great many social institutions and agencies consisting of shelters and food depots for men and for women, hotels for working men and for working women; industrial homes, workshops, and wood yards; labor bureaus, maternity homes, children's homes, and hospitals. Among its numerous social activities a great prison work is carried on. Its Missing Friends Bureau is world wide in scope and has been instrumental in the restoration of many lost ones.

Of 1,300 social institutions scattered about the world, 216 are in the United States and consist of the following: Working men's hotels, 73; naval and military hotels, 7; women's hotels, 2; young women's boarding homes, 10; industrial homes, 95; children's homes, 3; maternity hospitals and rescue homes, 13; slum posts and nurseries, 13.

The Army also maintains many emergency homes and much dispensary work is done in connection with what is known as "corps work." Supplementary to all this some 750 day schools are operated by the Army in different parts of the world, notably in Newfoundland, India and such countries. In the United States of America the Salvation Army is under the direction of Commander Evangeline Booth who is a daughter of the founder, William Booth, and a sister of the present general, Bramwell Booth, whose headquarters is in London. The International Headquarters in London is recognized all over the world as being custodian of those things fundamental to the life of the Army but each territory is under the leadership of a commissioner who directs all activities in the particular field to which he is appointed. The vastness of the Army's congregations throughout the world can be gauged by the fact that upwards of 45 millions of people attended its meetings in the United States of America in 1922. All Army authorities unite in saying that the movement found its inception in a great love for souls and that its usefulness can only be maintained as it continues to realize that originating spirit. Its multifarious social welfare enterprises are but one form of expressing that love. Fundamentally the Army is religious.

COL. W. F. JENKINS,

National Secretary.

SAMOA, an island group in the Pacific Ocean about 14° S. latitude and 133 miles north of Tonga. East of 171° of longitude all the group belong to the United States; all to the west of this line formerly belonged to Germany but since the war are administered by New Zealand. Tutuila, the largest island, lies in the American sphere. It is 70 miles from Apia and has an area of 77 square miles and a population of 6,185. American Samoa has 8,324 inhabitants. The soil is very fertile. Oranges, limes, grapes, and citron are among the fruits grown. Besides copra, the only article of export, there are produced taro, breadfruit, coconuts, yams, bananas, and pineapples. Imports to American Samoa amounted to \$235,293 in 1920 and exports to \$98,213. There is a powerful wireless station at Tutuila. The commandant of American Samoa is also governor by commission from the President of the United States. He appoints officers and frames ordinances, but native customs are not changed without the consent of the people. See also SAMOA, WESTERN, TERRITORY OF.

SAMOA, WESTERN, Territory of, formerly German Samoa, includes Savaii and Upolu, Apolima and Manono. These islands were occupied by British forces in 1914 and under the Treaty of Versailles these were assigned under a mandate from the League of Nations to the King of England in right of his Dominion of New Zealand and are now governed by the latter. Savaii has an area of 660 square miles and Upolu an area of about 600 square miles. Apia, on Upolu, is the chief port. In 1921 the population of Western Samoa was 37,051, of whom 2,026 were whites and 32,953 native Samoans. Of the whites, 1,035 were British, 292 Americans, 49 Swedes, and 402 Germans. There are 2 government schools with 784 pupils and about 8,000 pupils in the several missionary schools. The chief products of the territory are copra, cocoa, sugar, rubber and cardamoms. Revenues in 1921 amounted to £149,027 while expenditures were £300 in excess of this sum. Imports in 1920 were valued at £561,193 and exports at £386,587. The administrator in 1922 was Col. R. W. Tate, who acts under the New Zealand Minister for External Affairs.

SAMOS, an island in the Aegean Sea, off the coast of Anatolia, famous in early Grecian history. Its area is 181 square miles and its population is 65,576. Vathy is the capital. Greece was in occupation of the island in 1922.

SANFORD, Edward Terry, American jurist: b. Knoxville, Tenn., 23 July 1865. He was graduated from the University of Tennessee, in 1883, with the degrees of A.B. and Ph.B. In 1885 he received the degree of A.B. from Harvard University, and in 1889 the degrees of A.M. and LL.B. from the same institution. He had been admitted to the bar in 1888, a year before obtaining his law degree, and had begun practice in Tennessee, his home State and the scene of his long legal career. Throughout he took a keen and practical interest in education and public affairs. From 1898-1907 he was a lecturer in the law department of the University of Tennessee. In January 1907, he was appointed Assistant Attorney-General of the United States and filled that office until June 1908, when he

resigned to become United States District Judge for the Eastern and Middle districts of Tennessee. In this latter capacity he served until February 1923 when he became Associate Judge of the United States Supreme Court. To this office he had been nominated by President Harding, 24 Jan. 1923, to fill the vacancy created by Justice Pitney's retirement effective 1 Jan. 1923 on account of illness. Among the positions (executive and honorary) that Justice Sanford has occupied are the following: charter member and president board of trustees, George Peabody College for Teachers (1909); delegate to Universal Congress of Lawyers and Jurists, Saint Louis, 1904; member, American Bar Association (formerly a vice-president and member of general council); honorary member, Tennessee Bar Association (president 1904-05); vice-president, Tennessee Historical Society; honorary member, Harvard Chapter Phi Beta Kappa; Alabama State Bar Association; associate member, Vanderbilt Chapter Phi Beta Kappa.

SANITARY BUREAU, International. See PEACE AND ARBITRATION, INTERNATIONAL.

SAN JOSÉ SCALE. See ENTOMOLOGY, UNITED STATES BUREAU OF.

SANTLEY, Sir Charles, English singer: b. Liverpool, 28 Feb. 1834; d. London, 22 Sept. 1922. He studied under Gaetano Nava in Milan and made his operatic début at Pavia in 1857, as the Doctor in Verdi's 'Traviata.' Thereafter he sang Germont in this opera and the baritone rôle in 'Ernani.' In 1857 he returned to England and sang in 'The Creation.' His first appearance as a solo singer in England took place in 1857; and in March 1858 he sang the title-rôle in 'Elijah' at Exeter Hall, a part with which he was identified for many years. In 1859 he made his first appearance in England in opera at Covent Garden, as Hoel in 'Dinorah.' During the following three years various parts in new operas fell to him including Danny Mann in Benedict's 'Lily of Killarney' in 1862. In that year he was engaged for Her Majesty's Theatre, with Tietjens and other great artists, and he remained with this company for several seasons. For some time he sang on alternate nights, in Italian, at Her Majesty's Theatre; and, in English, at Covent Garden. One of his greatest successes was 'Don Giovanni.' His regular connection with the opera ended in 1870 when he sang Vanderdecken in 'The Flying Dutchman' with Ilma di Murska. He ended his operatic career in 1876, with the Carl Rosa Company at the Lyceum Theatre. It might be said that with the close of his operatic life his real career began. From this time onward he was a constant figure on the London concert stage and he took part in almost every festival of importance until his retirement. His first appearance at an English festival was at Birmingham in 1861, when he sang 'Elijah'; and this established him forever as the chief of English baritone singers. In 1907 Santley celebrated the 'jubilee' of his first appearance, with a concert at Albert Hall. He was knighted the same year. After this his public appearances were rather rare. Sir Charles was created a Commander of the Papal Order of Saint Gregory by Pope Leo XIII in 1887. He composed several orchestral works, a mass and other church music, and wrote

'Student and Singer' (1892); 'The Art of Singing' (1908), and a book of kindly reminiscences (1909). His first wife, Miss Gertrude Kemble, was the granddaughter of Charles Kemble, the actor and their daughter, Edith, made a great reputation as a concert singer during her short career which ended with her marriage to the Hon. R. H. Lyttelton. Sir Charles possessed wide culture, force of character and much humor.

SANTO DOMINGO, one of the Antilles and politically constituting the territories of the republic of Haiti and the Dominican Republic (q.v.).

SAO THOME AND PRINCIPE, two islands belonging to Portugal and lying about 125 miles off the coast of Africa, in the Gulf of Guinea. The population numbers 65,845, including 1,570 whites. The islands are volcanic in character and are covered by a rich vegetation. Cacao, coffee, rubber, and cinchona are the chief commercial products of the islands. The revenue in 1921 was 1,718,895 escudos and the expenditures exceeded this amount by about 10,000 escudos. Exports were valued at 17,490,648 escudos and imports at 12,398,237 escudos.

SARAWAK, a British Protectorate consisting of the northwestern part of the island of Borneo. Area, 42,000 square miles with 400 miles of coast line. The population is estimated at 600,000 and includes Dyaks, Malays, Kayans, Kenyahs, and Muruts with some Chinese. Kuching is the capital, located 23 miles inland on the Sarawak River. There are several Christian missions in the Protectorate. Coal exists in large quantities and oil has been discovered at Miri. The chief exports are gold, plantation rubber, cutch, benzine, gutta percha, fish, damar and tallow nuts. The bulk of the trade is with Singapore. There are four wireless stations. There is a large and flourishing trade which is handicapped by large import and export duties. The budget balances annually at about \$1,500,000. Foreign trade amounts to about \$19,000,000. The British agent in 1922 was Sir L. N. Guillemard.

SASKATCHEWAN, a Prairie Province of the Dominion of Canada, west of Manitoba and east of Alberta and extending from the United States border northwards to the Northwest Territories. It has an area of 251,700 square miles and in 1921 had a population of 757,510. Regina, the capital, has a population of 34,432. Other cities are: Saskatoon, 25,739; Moosejaw, 19,285; Prince Albert, 7,558; and North Battleford, 4,108. The province is administered by a lieutenant-governor and a legislative assembly of 63 members, elected for five years. Lieutenant-Governor in 1922, H. W. Newlands; Premier, W. M. Martin. For Education, Production, Industry, etc., see CANADA.

SAVINGS BANKS. According to the report of the Comptroller of the Currency to the Fourth Session of the 67th Congress, 4 Dec. 1922, savings deposits in the United States on 30 June 1922 aggregated \$13,381,661,000. Of this amount, \$3,046,647,000 was deposited in national banks, \$2,649,660,000 in State (commercial) banks, \$439,016,000 in stock savings banks, \$5,686,603,000 in mutual savings banks, \$1,382,748,-

000 in loan and trust companies, \$32,733,000 in private banks, \$137,736,000 in the Postal Savings System, and \$6,518,000 in school savings banks. In mutual and stock savings banks in the United States there were 12,538,997 depositors and 420,242 in the Postal System, while 1,295,607 children were depositors in the school savings banks. It is estimated that there are 16,982,842 individual depositors of savings in national, State, and private banks and in loan and trust companies. There are, moreover, about 3,000,000 owners of time certificates of deposit which are widely used in place of savings accounts in rural sections. Duplicating this number of savers but to some extent additional are the 5,809,888 members of building and loan associations and other millions who invest the proceeds of their thrift in life insurance, government bonds, real estate securities, industrial savings institutions, and corporate securities. In the savings banks of countries other than the United States there are 132,944,566 depositors credited with \$6,717,257,335 or an average deposit account of \$50.53. The average deposit in the mutual and stock savings banks of the United States was \$572.71 on 30 June 1922 and \$327.76 in the United States Postal Savings System. See BANKING.

SAXONY, (a) the province of Saxony in Prussia. Area, 9,756 square miles; population, 3,129,193; (b), the former Grand Duchy of Saxony, proclaimed a republic in 1918 and incorporated in the new state or federation of Thuringia; (c), the third largest state of the German Empire, formerly a Kingdom, with an area of 5,787 square miles and a population of 4,670,311. The chief cities are Leipzig, 604,397; Dresden, 587,758; Chemnitz, 304,961; Plauen, 104,926; and Zwickau, 70,509. There are 4,354,200 Lutherans, 213,615 Roman Catholics, 36,000 other Christians and 17,000 Jews. There are 2,233 common schools with 857,610 pupils and a number of private and secondary schools. There are 124 establishments of higher learning exclusive of the University of Leipzig, which is one of the greatest in Germany. Agriculture is well developed but the state is mostly industrial and is second only to Prussia. Textiles form the chief branch of her industries but mining and metal working are also of importance. Coal production averages about 4,000,000 tons yearly. Lignite is mined to the extent of 6,000,000 tons yearly. The Diet is vested with legislative functions. Executive functions are exercised by the Diet through a responsible ministry. The Premier in 1922 was Herr Johann Wilhelm Buck. See GERMANY.

SCHOOL CHILDREN, Medical Inspection of. See MEDICINE AND SURGERY, ADVANCEMENT OF.

SCHOOL CITIZENSHIP LEAGUE, American. See PEACE AND ARBITRATION, INTERNATIONAL.

SCHOOL OFFICERS, State. The following list of the chief school officials in the various States of the United States was compiled by the United States Bureau of Education and published in *School Life*, one of the publications of the Bureau. Those marked with an asterisk (*) were recently chosen.

CHIEF STATE SCHOOL OFFICIALS

State.	Name.	Title.	City.
Alabama.	John W. Abercrombie	State superintendent of education	Montgomery.
Alaska.	Lester D. Henderson	Commissioner of education	Juneau.
Arizona.	*C. O. Case	State superintendent of public instruction	Phoenix.
Arkansas.	*A. B. Hill	State superintendent of public instruction	Little Rock.
California.	Will C. Wood	State superintendent of public instruction	Sacramento.
Canal Zone.	W. W. Andrew	Superintendent of schools	Balboa Heights.
Colorado.	*Mrs. Mary C. C. Bradford	State superintendent of public instruction	Denver.
Connecticut.	A. B. Meredith	Commissioner of education	Hartford.
Delaware.	H. V. Holloway	State superintendent of public instruction	Dover.
District of Columbia.	F. W. Ballou	Superintendent of schools	Washington.
Florida.	W. S. Cawthon	State superintendent of public instruction	Tallahassee.
Georgia.	*N. M. Ballard	State superintendent of schools	Atlanta.
Hawaii.	Vaughan McCaughey	Superintendent of public instruction	Honolulu.
Idaho.	*Miss Elizabeth Russum	State superintendent of public instruction	Boise.
Illinois.	Francis G. Blair	State superintendent of public instruction	Springfield.
Indiana.	Benjamin J. Burris	State superintendent of public instruction	Indianapolis.
Iowa.	*Miss May E. Francis	Superintendent of public instruction	Des Moines.
Kansas.	*J. W. Miley	State superintendent of public instruction	Topeka.
Kentucky.	George W. Colvin	State superintendent of public instruction	Frankfort.
Louisiana.	T. H. Harris	State superintendent of education	Baton Rouge.
Maine.	Augustus O. Thomas	State superintendent of public schools	Augusta.
Maryland.	Albert S. Cook	State superintendent of schools	Baltimore.
Massachusetts.	Payson Smith	Commissioner of education	Boston.
Michigan.	Thomas E. Johnson	Superintendent of public instruction	Lansing.
Minnesota.	J. M. McConnell	Commissioner of education	St. Paul.
Mississippi.	W. F. Bond	State superintendent of public education	Jackson.
Missouri.	*Charles A. Lee	State superintendent of public schools	Jefferson City.
Montana.	Miss May Trumper	State superintendent of public instruction	Helena.
Nebraska.	John M. Matzen	State superintendent of public instruction	Lincoln.
Nevada.	W. J. Hunting	State superintendent of public instruction	Carson City.
New Hampshire.	E. W. Butterfield	Commissioner of education	Concord.
New Jersey.	John Enright	State commissioner of education	Trenton.
New Mexico.	*Miss Isabel Eckles	State superintendent of public instruction	Santa Fe.
New York.	Frank P. Graves	State commissioner of education	Albany.
North Carolina.	E. C. Brooks	State superintendent of public instruction	Raleigh.
North Dakota.	Miss Minnie Nielson	State superintendent of public instruction	Bismarck.
Ohio.	Vernon M. Riegel	Director of education	Columbus.
Oklahoma.	*M. A. Nash	State superintendent of public instruction	Oklahoma City.
Oregon.	J. A. Churchill	State superintendent of public instruction	Salem.
Pennsylvania.	T. E. Finegan	Superintendent of public instruction	Harrisburg.
Philippine Islands.	Luther B. Bewley	Director of education	Manila.
Porto Rico.	Juan B. Huyke	Commissioner of education	San Juan.
Rhode Island.	Walter E. Ranger	Commissioner of education	Providence.
South Carolina.	*J. H. Hope	State superintendent of education	Columbia.
South Dakota.	Fred L. Shaw	State superintendent of public instruction	Pierre.
Tennessee.	J. B. Brown	State superintendent of public instruction	Nashville.
Texas.	*S. M. N. Marrs	State superintendent of public instruction	Austin.
Utah.	C. N. Jensen	State superintendent of public instruction	Salt Lake City.
Vermont.	Clarence H. Dempsey	Commissioner of education	Montpelier.
Virginia.	Harris Hart	State superintendent of public instruction	Richmond.
Washington.	Mrs. Josephine C. Preston	State superintendent of public instruction	Olympia.
West Virginia.	George M. Ford	State superintendent of schools	Charleston.
Wisconsin.	John C. Callahan	State superintendent of public schools	Madison.
Wyoming.	Mrs. Katherine A. Morton	State superintendent of public instruction	Cheyenne.

SCHROEDER, Seaton, American naval officer: b. Washington, D. C., 17 Aug. 1849; d. there, 19 Oct. 1922. He was graduated from the United States Naval Academy in 1868 and passed through all the grades reaching commander in 1899; captain in 1903 and rear-admiral in 1908. He served on many important expeditions. In 1871 he was a member of Commodore Roger's expedition against the Korean forts and in 1879-80 was associated with H. H. Goringe in removing the obelisk from Egypt to New York. In 1886-88 he served in the Bureau of Navigation, Navy Department; in 1888-90 special duty with building dynamite cruiser *Vesuvius*, which he commanded in 1890-93. During the war with Spain he was executive officer of the *Massachusetts*, and was advanced three numbers in rank for eminent and conspicuous conduct. In 1900-03 he was naval governor of the island of Guam and commander of the *Yosemite*; in 1908-09 he commanded a division of the Atlantic fleet; and in 1909-11 was commander-in-chief of the Atlantic fleet. After his

retirement in 1911 he served three years in the Hydrographic Office in Washington and was recalled to active duty during the World War. Admiral Schroeder contributed to magazines; was prize essayist, United States Naval Institute in 1894; and wrote a book entitled 'Fall of Maximilian's Empire' (1887).

SCIENCE, American Association for the Advancement of. An organization founded in September 1848 which "aims to advance science in the New World in every feasible way." The majority of its members are of the United States and Canada, but its field is not limited to these two countries and it has members in all parts of the world. Its organization presents two aspects. In addition to individual members, numbering 10,566 in good standing on 30 Sept. 1922, it is also a "great general organization of 83 wholly autonomous and independent associated societies and 13 local academies of science and learning." Forty-three of the larger associated societies and all of the associated academies are officially

affiliated with the Association. The Association has 16 sections, representing the main current subdivisions of science, each designated by a letter. The following is a list of the sections with the names of the chairman and secretary of each for the calendar year 1923. The chairmen of the sections are also vice-presidents of the Association. In the list the first name in each case is that of the chairman and the second that of the secretary: A (Mathematics)—Harris Hancock, University of Cincinnati, Cincinnati, Ohio; William H. Roever, Washington University, Saint Louis, Mo.; B (Physics)—W. F. G. Swann, University of Chicago, Chicago, Ill.; S. R. Williams, Pasadena, Calif.; C (Chemistry)—E. W. Washburn, University of Illinois, Urbana, Ill.; W. D. Harkins, University of Chicago; D (Astronomy)—Vacant (1 May 1923); F. R. Moulton, University of Chicago; E (Geology and Geography)—N. M. Fenneman, University of Cincinnati; Elwood S. Moore, University of Toronto, Toronto, Canada; F. (Zoological Sciences)—E. L. Rice, Ohio Wesleyan University, Delaware, Ohio; H. W. Rand, Harvard University, Cambridge, Mass.; G (Botanical Sciences)—C. J. Chamberlain, University of Chicago; Robert B. Wylie, State University of Iowa, Iowa City, Iowa; H (Anthropology)—E. A. Hooton, Peabody Museum, Cambridge, Mass.; R. J. Terry, Washington University Medical School, Saint Louis, Mo.; I (Psychology)—Raymond Dodge, Wesleyan University, Middletown, Conn.; Frank H. Freeman, University of Chicago; K (Social and Economic Sciences)—J. F. Crowell, 30 Church Street, New York City; Frederick L. Hoffman, Babson Institute, Wellesley, Mass.; L (Historical and Philological Sciences)—Florian Cajori, University of California, Berkeley, Calif.; Frederick E. Brasch, 6963 Morton Place, Chicago, Ill.; M (Engineering)—Vacant (1 May 1923); L. W. Wallace, 26 Jackson Place, Washington, D. C.; N (Medical Sciences)—Richard P. Strong, Harvard University Medical School, Boston, Mass.; A. J. Goldfarb, College of the City of New York; O (Agriculture)—R. A. Pearson, Iowa State College, Ames, Iowa; P. E. Brown, Iowa State College, Ames, Iowa; P (Manufactures and Commerce)—Not organized (1 May 1923); Q (Education)—Henry W. Holmes, Harvard University; A. S. Barr, 1925 Hazelwood Avenue, Detroit, Mich. The last annual meeting of the Association was held at Cambridge, Mass., 26-30 December 1922 and was attended by 2,339 members. A special summer meeting, with the Pacific and Southwestern divisions, will be held at Los Angeles, Calif., 17-19 Sept. 1923. The next regular meeting will be held at Cincinnati, Ohio, beginning 27 Dec. 1923. The officers of the Association for the calendar year 1923 are: President, Charles D. Walcott, Smithsonian Institution, Washington, D. C.; permanent secretary, Burton E. Livingston, Johns Hopkins University, Baltimore, Md.; general secretary, D. T. MacDougal, Carnegie Institution of Washington, Department of Botanical Research, Tucson, Ariz.; assistant secretary, Sam F. Trelease, Johns Hopkins University, Baltimore, Md.; treasurer, R. S. Woodward, Carnegie Institution of Washington, Washington, D. C. The Association's mail address is

Smithsonian Institution Building, Washington, D. C.

SCIENCES, National Academy of. See ACADEMY OF SCIENCES, NATIONAL.

SCOTLAND. The northern part of the island of Great Britain and an administrative subdivision of the United Kingdom. It has an area of 29,797 square miles and in 1921 had a population of 4,882,288, or 164 inhabitants to the square mile. The chief cities, with their populations, are: Glasgow, 1,034,069; Edinburgh, the capital, 420,281; Dundee, 168,217; Aberdeen, 158,869; Paisley, 84,837; and Greenock, 81,120. The total number of births in 1921 was 123,196; of deaths, 66,211; of marriages, 39,268. The Church of Scotland is Presbyterian in form. It has 1,457 parishes and an aggregate endowment from all sources of £400,000, and 739,000 communicants. Ministers number 1,800 with 105 lay missionaries and 193,000 Sunday scholars. The United Free Church of Scotland has 1,484 congregations, 530,000 adherents and 198,000 Sunday scholars. The Episcopal Church of Scotland has 56,000 adherents and the Roman Catholic 546,000 members. Education is compulsory to the age of 15 years. There are 3,123 schools in receipt of government grants with accommodation for 963,000 pupils and an average attendance of 675,000. There were 24,604 certificated teachers. For industries, communications, etc., see GREAT BRITAIN.

SCULPTURE. See PAINTING AND SCULPTURE.

SEAMAN, Mrs. Elizabeth Cochrane (NELLIE BLY), American journalist: b. Cochrane's Mills, Pa., 1866; d. New York, 27 Jan. 1922. She was a daughter of Judge Cochrane, founder of the town in which she was born, and began her journalistic career while still in her teens, writing for a Pittsburgh paper at \$5 a week. Eventually she developed into one of the most widely known and highest salaried newspaper women in the country, having earned, it is said, as much as \$25,000 in a single year with her pen. She was a pioneer among women writers in the field of sensationalism. She went down into the sea in a diving bell, ascended into the air in a balloon and, upon one occasion, lived for a time as an inmate of an insane asylum, all for the purpose of acquiring material for sensational newspaper articles. However, the feat that made her famous was her trip around the world in 1889. She was sent out by the New York *World* to beat the record of Phileas Fogg, the hero of the novel, 'Around the World in Eighty Days' by Jules Verne, and succeeded, making the tour in 72 days 6 hours and 11 minutes. Her progress was followed by all readers of newspapers and by the time she landed back in New York she was a national character. A Pittsburgh editor gave her the name Nellie Bly and she used it throughout the remainder of her career. In 1895 she married Robert L. Seaman, a wealthy manufacturer, 40 years her senior. When he died in 1910 she took charge of his estate, but a series of forgeries by her employees, disputes of various sorts, bankruptcy proceedings and a mass of vexatious and costly litigation swallowed up her fortune. She returned to journalism and at the time of her death

was a member of the staff of the New York *Evening Journal*.

SEBREE, Uriel, American naval officer: b. Fayette, Mo., 20 Feb. 1848; d. Coronado, Cal., 6 Aug. 1922. From the schools of Fayette he went to the United States Naval Academy, where he was graduated in 1867. He served in various parts of the world and was promoted captain in 1901 and rear-admiral in 1907. He retired in February 1910, having had many important commands. In 1873 he was a member of the Arctic relief expedition on the steamship *Tigress* under Greeley; also a member of the Greeley relief expedition under Commander Schley in 1884. In 1889-92 he was on the *U. S. S. Baltimore* under command of Captain Schley. From 1903 to 1904 he commanded the battleship *Wisconsin*. Next he served as naval secretary of the Lighthouse Board, which he gave up to become commander-in-chief of the Pacific fleet; and he took the armored cruiser squadron around Cape Horn in 1907, in advance of the battleship fleet which circled the globe. On his arrival Admiral Sebree took command of the Pacific squadron and in 1910 led his cruisers to the Asiatic station.

SELANGOR. See FEDERATED MALAY STATES.

SELDEN, George Baldwin, American inventor: b. 1845; d. Rochester, N. Y., 17 Jan. 1922. He was the inventor of the first gasoline-propelled vehicle and was a pioneer in the automotive industry. For years he was president of the Selden Motor Company, of Rochester. Mr. Selden was graduated from Yale University in 1869 and thereafter studied law under his father. He began his inventive career by experimenting with engines for light vehicles driven by steam, ammonia gas, bisulphite of carbon and other liquids. He then turned his attention to petroleum as a fuel. In 1875 he built an engine that was driven by a mixture of laughing gas and kerosene, but it proved to be a failure. By the following year he had reached the conclusion that the internal combustion engine of the compression type, using liquid fuel, was the solution of his problem. Despite the gibes of others he persevered. In 1879 he filed the first patent for a gasoline motor-propelled vehicle only to reap a rich harvest of long-drawn-out litigation which is said to have cost him nearly all of the money his invention brought him in. A patent was issued to him in 1896. In the meantime, other gasoline-propelled vehicles had been built in the United States and in Germany. Setting up a claim to the basic patent, Selden, in 1900, brought suits against Ford and Winton. The lower courts decided in his favor, but the decision was reversed by the Appellate Court, which, though it upheld the Selden patent, ruled that Ford and Winton were making a motor of another type. Later the litigation commenced by Selden was renewed by the Electric Vehicle Company of New Jersey, to whom the inventor sold the manufacturing rights. With the exception of Ford, the manufacturers against whom suit had been brought surrendered and formed the Association of Licensed Automobile Manufacturers, agreeing to pay a royalty equal to 1¼ per cent of the price of their cars. Later the royalty was reduced to four-fifths of one per cent. Ford continued the fight alone. In 1911

Judge Noyes handed down an opinion in which he affirmed Selden's patent but held that the Ford engine was of the Otto type. As the other manufacturers were using the same type of engine that Ford was using the association they had formed was disbanded and the royalties that were being paid on the Selden patent ceased.

SELENIUM. See CHEMICAL MANUFACTURING.

SEMBAT, Marcel Etienne, French politician: b. Bonnières, Seine et Oise, 19 Oct. 1862; d. Chamonix, 5 Sept. 1922. He was educated at the College Stanislas, and became one of the most prominent leaders of the Moderate Socialist party in the French Chamber. His career belongs rather to the pre-war period, when, under the leadership of Jean Jaures, the United Socialist Party in the Chamber formed a solid phalanx of opposition to all but the most pronouncedly radical governments. Jaures, nicknamed "the Thunderer," was the unquestioned orator, but Marcel Sembat's caustic wit and the remarkable faculty he had of using the weak point of an argument, made him the valuable debater. The tragic end of Jaures and the outbreak of the World War forced the eclipse of the United Socialist Party. While France was fighting the enemy, all patriotic Frenchmen, whether Socialists or not, joined the "Union Sacrée"; and Marcel Sembat was one of those who took office, first without portfolio and then as Minister of Public Works, by the side of the men they had formerly opposed so bitterly in the Chamber. When the struggle took place at Tours over the question of adherence to the Third International and the Communist leaders, Cachin and Frossard won the day, Marcel Sembat, realizing that the last hour of the United Socialist Party had come, delivered his last great speech. In this he declared that he and his friends would have to sever their connection with their Communist colleagues. Although Sembat remained Deputy for the Department of the Seine (Paris), which he had held since 1893, he took little or no part in politics thereafter. Sembat was a very wealthy man and head of a large coal-distributing business; but neither his wealth, nor his position as a big employer of labor, prevented him from giving whole-hearted support to the Socialist movement. He was often reproached for being a "millionaire Socialist" but he won respect for the sincerity of his opinions and the honest work he did for the improvement of conditions among the workers of France. He was a man of culture, wrote on French art and followed the work of English scholars with special interest. Sembat was editor of *La Lanterne* and *l'Humanité*. The sudden death of M. Sembat was a terrible grief to his devoted wife, who on the day following his death shot herself beside his body. Death was instantaneous. Mme. Sembat was a painter and exhibited a canvas at the Salon of 1920. The couple had been married 30 years and were childless. M. Sembat's fortune, between 4,000,000 and 5,000,000 francs, by a strange irony of fate, reverts in its entirety to the bourgeois government, which the Socialist leader, Marcel Sembat, had fought throughout his entire political life.

SENEGAL. See FRENCH WEST AFRICA.

SEPTICEMIA, Hemorrhagic. See HEMORRHAGIC SEPTICEMIA.

SERBIA. See JUGOSLAVIA.

SEVENTH DAY ADVENTISTS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

SÈVRES, Treaty of. See NEAR EAST.

SEWAGE DISPOSAL. See PUBLIC HEALTH SERVICE, UNITED STATES.

SHACKLETON, SIR ERNEST (Henry), British explorer: b. Kilkee, Ireland, 15 Feb. 1874; d. on board the *Quest* off South Georgia Island in the South Atlantic Ocean, 5 Jan. 1922. He was educated at Dulwich College, entered the British mercantile marine when 16 years of age, served 11 years and was commissioned a lieutenant in the Royal Naval Reserve. In 1901 he was chosen third lieutenant of the National British Antarctic Expedition, commanded by Captain (then Lieutenant) R. F. Scott, which made the voyage in the *Discovery* and which reached south latitude 82° 17', approximately 500 miles from the South Pole and the farthest point south reached up to that time. Shackleton's work as a member of this expedition resulted in his being selected by Captain Scott to make the final dash over the great ice barrier. Owing to ill health, Shackleton was forced to return to England in the relief ship before the expedition completed its work. The long voyage home completely restored his health. In 1904 he was chosen secretary of the Scottish Geographical Society. In 1907 he again started south as the head of the British Antarctic Expedition, organized by himself, making the voyage in the *Nimrod*. On 9 Jan. 1909 he reached South Latitude 88° 23', but 113 miles from the South Pole. There he was forced to turn back. Having himself broken all records in South Polar research, his own record was broken in slightly less than three years when, on 16 Dec. 1911, Amundsen reached the Pole. On this expedition Shackleton ascended Mount Erebus, 13,120 feet high, and located the south magnetic pole, determining its position as latitude 72° 25' S.; longitude 154° E. He also ascertained that a great chain of mountains extends from the eighty-second parallel, south of McMurdo Sound, to the eighty-sixth parallel. On his return to England, Shackleton learned of the expeditions of Amundsen and Scott and expressed the opinion that one or the other would reach the Pole by following either his own or a parallel route. Following receipt of the news that Amundsen had reached the Pole and that Scott, after accomplishing the same feat on 18 Jan. 1912, had died in the Antarctic of hunger and exposure 29 March following, Shackleton set out on an even more daring project—that of crossing the Antarctic continent from one end to the other. He left London 1 Aug. 1914. Three days later the war with Germany started. Shackleton immediately, with the consent of his comrades, offered his ships, stores and his own and their services to his country, but, at the express wish of the King and the Government, the voyage was continued. Misfortune after misfortune was encountered by the expedition. One of its vessels, the *Aurora*, drifted for 10 months in the ice; another, the *Endurance*, was caught in an ice

pack and so badly damaged that it had to be abandoned, the crew taking refuge on Elephant Island. Shackleton and two members of his party made their way to South Georgia and thence went to Falkland Islands for assistance. He fitted out a ship and started back to rescue his companions, but, owing to terrific gales, it was not until he had made his fourth attempt at rescue that the marooned men on Elephant Island were reached and brought away, 30 Aug. 1916. The leader of the marooned party was Frank Wild, who again accompanied Shackleton on his last Antarctic trip and succeeded to the command of the *Quest* when Shackleton died. Returning to England after this third trip to the Antarctic, Shackleton, during the North Russian Winter Campaign of 1918-1919, served as Director of Equipment and Transport of the British Mobile Forces. Then again came the call of the Antarctic, too persistent to be ignored. In September 1921 he set sail in the *Quest*, a tiny vessel registering only about 200 tons. The voyage, during certain portions, is said to have been the most tempestuous of any he had ever made. He was taken ill about the time his vessel left Rio de Janeiro, and died on the day after it reached South Georgia Island of *angina pectoris*. News of his death did not reach the outer world until after the lapse of nearly one month. His body was first taken to Montevideo, Uruguay, to be shipped to England, but, in accordance with the wishes of his widow, Lady Shackleton, it was sent back to South Georgia Island and buried in the graveyard of the English Church at Gryvicken, so that the region which had so fascinated him might be his last resting place. His purpose in making this last expedition was to investigate the underwater connection between South Africa and South America, and to determine the extent and ramifications of the great submarine ridge which rears itself up for thousands of miles from the floor of the middle Atlantic. Among the awards made to him were the special gold medal of the Royal Geographical Society, the King's Polar Medal with two bars and gold medals from the Royal Scottish Geographical Society, and the geographical societies of Denmark, Belgium, France, Antwerp, Italy, America, Paris and Russia. He was an officer of the Legion of Honor (France) and was knighted in 1909. He published 'The Heart of the Antarctic' (1909), and 'The Diary of a Troopship.'

SHAFROTH, John Franklin, American public official, b. Fayette, Mo., 9 June 1854; d. Denver, Col., 20 Feb. 1922. He was graduated from the University of Michigan in 1875 and was given LL.D., from this college, in 1909. In 1876 he was admitted to the bar and practiced at Fayette, Mo., until 1879, when he removed to Denver. From 1887-91 he was city attorney of Denver. In 1895 he was elected to Congress as a Republican, but in 1896 aligned himself with the Free Silverites, who three times re-elected him to Congress. He refused to retain his seat in the 58th Congress (15 Feb. 1904), on the ground that the general election at which he was a candidate had been tainted by fraud. He was governor of Colorado in 1909-11 and 1911-13, and in 1913 was elected to the United States Senate, as a Democrat.

SHANTUNG SETTLEMENT. See WASHINGTON CONFERENCE.

SHARP, William Graves, American diplomat: b. Mount Gilead, Ohio, 14 March 1859; d. Elyria, Ohio, 17 Nov. 1922. He received the degree of LL.B. from the University of Michigan in 1881, and the degree of LL.D. from the University of Michigan, Allegheny College, and Oberlin College in 1919. At Elyria, Ohio, he practiced law for a while, and for many years he was interested in the manufacture of iron and chemicals. He was Prosecuting Attorney for Lorain County, Ohio (1885-88); Democratic Presidential Elector (1892); Democratic nominee for Congress (1900); and delegate to the Democratic National Convention, St. Louis (1904). From 1909-15 he was a member, from the 14th Ohio District, of the 61st, 62nd, and 63rd Congresses, but resigned 23 July 1914. He served from 2 Dec. 1914-14 April 1919 as Ambassador Extraordinary and Plenipotentiary to France, in which capacity he was the first American to become Dean of the diplomatic corps at Paris. He was a life-long student of astronomy, and attained the distinction of being elected a foundation member of the Société Astronomique de France, by which nation he was awarded the Grand Cross of the Legion of Honor.

SHAW UNIVERSITY, a Baptist co-educational institution, founded in 1865 and located at Raleigh, N. C. In 1922-23 it had a faculty of 30 members, 406 students, property valued at \$500,000 and an income of \$115,875.97. Joseph L. Peacock, D.D., is president.

SHEALY, Terence J., Jesuit missionary and lecturer: b. Cork, Ireland in 1862; d. New York, 5 Sept. 1922. Educated at Mungret College, Ireland, on his arrival in this country he entered the Novitiate of the Society of Jesus at Frederick, Mo., and was ordained by the late Cardinal Gibbons in 1898. He was founder and head of the Fordham Law School, where for many years he was professor of jurisprudence. For the last 13 years he had conducted layman's retreats. The first retreat under his direction was at Keyser Island, South Norwalk, Conn. In 1911 a retreat was established at Mount Manresa, Fort Wadsworth, Staten Island, where Roman Catholic men spend the week end for religious instruction. In connection with the Laymen's League, Father Shealy established extension work in Philadelphia, Albany, Washington, and other large cities in the East.

SHEARER, John Sanford, American physicist: b. New York, 20 Oct. 1865; d. Ithaca, N. Y., 18 May 1922. He was graduated from Cornell University in 1893 and received the degree of Ph.D., from the same institution in 1900. He became an instructor in physics in Cornell, assistant professor in 1902 and full professor in 1909. For one year he taught physics in Columbia University and then returned to his alma mater, where he remained the rest of his life. Doctor Shearer was the author of 'Notes and Questions on Physics' (1900); and 'Lecture Outlines and Notes' (1906). He was a major in the Sanitary Corps, National Army, in 1917; lieutenant-colonel, 1918; and consultant in roentgenology, American Expeditionary Forces, France.

SHEEP. See AGRICULTURE IN THE UNITED STATES.

SHELTON, Albert Le Roy, American missionary: b. Indianapolis, Ind., 9 June 1875; d. 17 Feb. 1922. His parents moved to Kansas when he was five years old and he was sent to local schools. He began to teach when he was 17. During the war with Spain he enlisted in the 22nd Kansas regiment, but did not see service. He obtained a scholarship in the Medical Department of the University of Kentucky and completed a four-years' course there. Soon after his graduation the United Christian Missionary Society appointed him medical missionary to China. In 1903 he went to the Far East, first stationed at Tachienlu; but in 1908 he was transferred to Batang, near Tibet. He was a member of the Disciples of Christ. In 1920 he was kidnapped and held by Chinese brigands for 60 days. He related this experience in October 1920 when attending a church convention in Saint Louis. While in New York in the autumn of 1921 he collaborated with Dr. Cory in writing a book called 'Pioneering in Tibet,' dealing with missionary work in the Far East. Dr. Shelton left Vancouver 1 Aug. 1921, to open a hospital at Lhasa, having received permission to do so from the Dalai Lama, the supreme power there. He was captured by Chinese brigands, who carried him into the mountains. The missionaries refused to sanction efforts to ransom him saying that "ransom would lead to the kidnapping of all missionaries." Chinese troops finally routed the brigands and the fleeing kidnappers abandoned Dr. Shelton because he had become ill. He was found by a rescue party, which included Fred A. Smith, a Chicago newspaper man. His wife did not accompany the missionary to Batang, having gone to Calcutta to obtain translations of the Scriptures in the Tibetan language.

SHEPPARD-TOWNER ACT. See MATERNITY AND INFANCY ACT.

SHIPBUILDING. According to *Lloyd's Register of Shipping*, the total output of the shipyards of the world in 1922 amounted to 852 vessels of 2,467,084 gross tons, as compared with 4,341,679 tons in 1921, a decrease of 1,874,595 tons. This sharp decline, it was stated, brought the production for 1922 almost 900,000 tons below the figure for the last pre-war year, 1913. Construction in the United States aggregated 59 vessels of 119,138 tons; in Great Britain and Ireland, 235 vessels of 1,031,081 tons; in France, 62 vessels of 184,509 tons; in Germany, including Danzig, 195 vessels of 575,264 tons; in Japan, 49 vessels of 83,419 tons; in the Netherlands, 60 vessels of 163,132 tons. The 1922 decrease was sharpest in American yards in comparison with the total for the preceding year, the decline being 887,000 gross tons, against 507,000 tons for Great Britain and Ireland and 480,000 tons for all other countries. *Lloyd's Register* gives the following table showing the comparison between the two years, the figures representing gross tons:

	1922	1921
United States.....	119,138	1,006,413
Great Britain and Ireland.....	1,031,081	1,538,052
Other countries.....	1,316,865	1,797,214
World total.....	2,467,084	4,341,679

The progressive decline of American shipbuilding is illustrated by the fact that while American yards launched 532,000 tons less than the British yards in 1921, the margin was widened to 911,000 tons last year. In 1921 the shipyards of this country launched 790,000 tons less than other countries excluding Britain; but last year the gap was increased to nearly 1,200,000 tons.

The volume of world shipbuilding as a whole last year was only about a third of the record year, 1919, since which time there has been a steady decrease. The world total for the last pre-war year and the four post-war years has been as follows in gross tons:

1913.....	3,332,000
1919.....	7,144,000
1920.....	5,861,000
1921.....	4,341,000
1922.....	2,467,000

While practically every maritime country in the world showed a decrease in shipbuilding during the past year as compared with the previous one, Germany about held her own, her production being second only to that of British yards. Launchings in Germany during 1922 were 525,829 gross tons, as against 509,064 tons in 1921. The output for both years is above the pre-war figure of 465,000 tons, and represents a total of more than a million tons of new German vessels. Nearly 25 per cent of last year's total production is represented by the German output alone. And, in addition, the shipyards of Danzig during the year launched 49,435 tons. In 1913 the German output was only about 15 per cent of the total for the world.

In 1913 American shipyards produced only 8 per cent of the world total; but in 1919 57 per cent of the aggregate output was produced in this country, or more than Great Britain and all other nations combined. In 1920, American yards' work represented 40 per cent of the total; but in 1921 there was a drop to 23 per cent, and last year's production was less than 5 per cent of the whole. The gross tons of output for these years, compared with the British production as follows, *Lloyd's Register* states:

	United States	Great Britain and Ireland
1913.....	276,000	1,232,000
1919.....	4,075,000	1,620,000
1920.....	2,476,000	2,055,000
1921.....	1,006,000	1,538,000
1922.....	119,000	1,031,000

British yards, it will be noticed, last year produced about 900,000 tons less than in the year before the war, and their share of the world's output is still below the pre-war figure, although a gain was shown last year over the previous year in this respect. In 1913 the British production was 58 per cent of the world total. In 1919 it was only 22 per cent, but in 1920 it rose to 35 per cent. It remained at the latter figure in 1921, but last year it increased to 42 per cent. The output of other than British or American yards represents a much greater percentage of the whole now than it did before the war. In 1913 the proportion of the total output produced by the smaller maritime nations was 83 per cent.

In 1919 it was only 20 per cent, but in 1920 it rose to 22.7 per cent, in 1921 to 41.4 per cent and last year to 53.4 per cent. This gain was almost entirely due to the activities of the German shipyards. And while Germany in 1913 launched nearly 1,500,000 tons less than Great Britain did, last year she was within 500,000 tons of the British total, and her output was much greater than that of any other maritime nation and nearly five times the American total.

World construction of tankers showed a sharp decline last year, launchings of this class of vessels aggregating nearly 700,000 tons less than for the previous year. The British total showed a slight gain, but the American production was greatly reduced. The following table prepared by *Lloyd's Register* shows in gross tons the comparison for the two years:

	1922	1921
United States.....	14,440	690,000
Great Britain and Ireland.....	262,826	251,000
Other countries.....	78,588	109,000
World total.....	355,854	1,050,000

More than 70 per cent of the world's tanker construction last year, therefore, was in British yards, as compared with less than 5 per cent in the United States.

Decreases were also shown last year in the number of large vessels under construction, those of 10,000 gross tons and upward totaling only 27 as against 47 in 1921. The largest ship launched was the *Columbus* of 35,000 tons, built by Germany.

Motorship construction showed a decline last year, the launching of vessels to be fitted with internal combustion engines representing 209,557 gross tons, as against 306,000 tons in 1921. There was a greater decline, however, in the construction of ships to be fitted with turbines, these aggregating 776,000 tons, compared with 1,185,000 tons the previous year.

Exclusive of Britain and Germany, the greatest volume of launchings last year was in France, followed by Holland, the United States, Italy, Japan and the British Dominions, in the order named. The output of these countries last year compared with 1921 was as follows, in gross tons, *Lloyd's Register* states:

	1922	1921
France.....	184,509	210,663
Holland.....	163,132	232,402
United States.....	119,138	1,006,341
Italy.....	101,177	164,748
Japan.....	83,419	227,425
British Dominions.....	62,765	129,675

It will be noted that there were a number of changes in the ranking of the various shipbuilding countries during the past year. Great Britain still leads, but the United States has dropped from second place to fifth. Germany has advanced from third to second, and France from sixth to third. Holland still holds fourth place, Japan has dropped from fifth to seventh, and Italy has advanced from seventh to sixth.

On 1 Jan. 1923, American shipyards were building or under contract to build for private shipowners 218 steel vessels of 251,858 gross tons, compared with 216 steel vessels of 257,328

gross tons on 1 Dec. 1922. These figures do not include Government ships or ships building or contracted for by the United States Shipping Board. See also MERCHANT MARINE OF THE UNITED STATES.

SHIPPING. World Tonnage.—A summary of the 1922-23 edition of *Lloyd's Register of Shipping*, reprinted in *Commerce Reports*, published by the United States Department of Commerce, lists a grand total of 33,935 merchant vessels of over 100 gross tons, with an aggregate gross tonnage of 64,370,786. This represents an increase of 729 ships and 2,396,133 gross tons over the world's merchant fleet on the corresponding date (30 June) of the preceding year and an increase of 3,099 ships and 15,281,234 gross tons over the 1914 figures. The steel steam and motor tonnage amounted to 56,802,000 gross tons on 30 June 1922, as compared with 54,158,000 on 30 June 1921, and 42,514,000 on 30 June 1914. The following table shows the merchant fleet of steam and motor ships of the principal maritime nations:

TONNAGE OF STEEL, STEAM AND MOTOR VESSELS OF OVER 100 GROSS TONS.			
COUNTRIES	1914	1921	1922
United Kingdom ..	18,877,000	19,288,000	19,053,000
British Dominions ..	1,407,000	1,950,000	2,201,000
United States	1,837,000	12,314,000	12,506,000
Austria-Hungary ..	1,052,000	.....	.....
Denmark	768,000	866,000	944,000
France	1,918,000	3,046,000	3,303,000
Germany	5,098,000	654,000	1,783,000
Greece	820,000	576,000	653,000
Holland	1,471,000	2,207,000	2,613,000
Italy	1,428,000	2,378,000	2,600,000
Japan	1,642,000	3,063,000	3,325,000
Norway	1,923,000	2,285,000	2,237,000
Spain	883,000	1,094,000	1,187,000
Sweden	992,000	1,037,000	996,000
Other countries	2,398,000	3,400,000	3,301,000
Total	42,514,000	54,158,000	56,802,000

Germany's merchant fleet declined from more than 5,000,000 gross tons before the war to just over 600,000 in 1921, and increased to 1,783,000 gross tons during the year ended 30 June 1922. A part of the German gain is undoubtedly reflected in the decline of British tonnage during the same period, due to the resale to German buyers of large numbers of former German ships ceded to Great Britain as a part of the reparations program. During the year, which ended 30 June 1922, German interests repurchased 130 vessels aggregating 491,567 gross tons.

In fact, the tonnage of British steel steam and motor vessels was but slightly larger in 1922 than in 1914, while the world's merchant tonnage of this class increased 34 per cent, thereby reducing the relative importance of the British seagoing fleet.

American steel steam and motor tonnage registered a small increase in 1922, as did that of the other countries listed, with the exception of the United Kingdom, Norway, and Sweden. Next to Germany, the greatest gain in 1922 was made by Holland, with an increase of more than 400,000 gross tons.

Idle Tonnage.—In a review published in *Commerce Reports* (12 Feb. 1923) the United States Department of Commerce stated that the employment of the world's merchant marine was

greater in 1922 than in 1921, owing largely to the increased over-seas movement of goods, but that operation was on the basis of low and declining charter rates. During the last six months of 1922, according to the review, the idle steam tonnage of the world declined approximately three-quarters of a million gross tons and 1 Jan. 1923 stood at around 9,000,000 tons. During the whole of 1922 idle tonnage declined nearly 20,000,000 tons.

Idle tonnage in British ports, which was 1,961,000 gross tons on 1 Jan. 1922, and 1,667,000 tons on 1 July 1922, dropped to 1,010,000 tons on 1 Jan. 1923. The tied-up tonnage in French ports, which increased from 1,085,000 tons to 1,200,000 tons during the first half of the year, declined to 730,000 tons at the end of 1922. Italian and Norwegian idle tonnage also declined. On the other hand, the idle fleet of the United States Shipping Board increased over 400,000 tons, and the privately owned American vessels out of employment on 1 Jan. were nearly 200,000 tons above the amount on 1 July. Japanese and Greek tonnage also had less employment at the end of the year than on 1 July.

The following table shows the idle tonnage in the principal maritime countries of the world. The Department of Commerce stated that the figures in each case are not absolutely accurate and some interpolations had to be made, but as a whole it gives a fair picture:

GROSS TONNAGE IDLE IN THE PRINCIPAL MARITIME COUNTRIES OF THE WORLD.			
COUNTRY	1 Jan. 1922	1 July, 1922	1 Jan. 1923
United States:			
Shipping Board ..	4,314,000	3,978,000	4,411,000
Shipping Board tankers	124,000	124,000	214,000
Privately owned ..	781,000	523,000	703,000
United Kingdom ..	1,961,000	1,667,000	1,010,000
France	1,085,000	1,200,000	730,000
Italy	1,585,000	585,000	472,000
Holland	327,000	330,000	330,000
Norway	207,000	112,000	53,000
Sweden	204,000	114,000	22,400
Greece	170,000	100,000	116,000
Japan	120,000	79,000	99,000
Belgium	1275,000	1275,000	275,000
Denmark	161,000	33,000	.....
Spain	1,530,000	530,000	520,000
Total	10,934,000	9,740,000	8,955,400

¹ Interpolated from best available data.

The amount of German tonnage out of employment on 1 January was reported to be negligible. Continuing its review of the shipping situation, the Department of Commerce said: "According to the specially constructed index number of trip charter rates (described in *Commerce Reports*, August 28, 1922, p. 615), which stood at 121 per cent of 1911-1913 on July 30, 1922, the level of ocean rates had dropped to 111 per cent by September 30 and to 109 by December 31, 1922. When it is considered that the index numbers of wholesale prices in this and other countries are above 150 per cent of pre-war, it can be seen how much ocean rates are out of line. The lowness of rates, however, is understandable on referring to the enormous fleet of idle vessels. No conspicuous or prolonged rise in rates is likely to occur with this cloud over the market.

"It is difficult to understand why idle ton-

nage declined during the year in the face of dropping rates, unless consideration is given to the volume of ocean-borne trade. While figures for all countries are not available, there are sufficient data to indicate that the volume of international trade increased during 1922.

"British coal and coke exports, which made up nearly one-third of the total volume of overseas shipments of the world in 1913, increased from 24,660,000 tons in 1921 to 64,198,000 tons for 1922, a total not far from the record of 76,687,000 tons for 1913. This increase of 40,000,000 tons in ocean shipments of coal during 1922 undoubtedly was the big factor in causing more tonnage to be put into service. The total inborne and outborne ocean-carried trade of France, which amounted to 42,219,000 tons in 1913 and to only 27,211,000 tons in 1921, will be approximately 40,000,000 tons in 1922, based on returns for the first nine months of the year.

"Our own ocean-borne trade declined approximately 13,000,000 tons in the fiscal year 1922. Of this decline, over half was represented by coal. These instances indicate clearly that the total movement of goods overseas in 1922 gained considerably over 1921 and provided work for additional ships, though at starvation rates.

"**Sales Prices of Ships.**—While idle tonnage was declining and rates dropping, the sales price of ships was maintained at slightly above \$30 a dead-weight ton. The average price of 12 cargo ships of 5,000 to 10,000 dead-weight tons, not over 5 years old, sold during the last half of 1921 was \$31 (£6 18s. 5d.) per dead-weight ton, as compared with \$33 (£7 19s.) for 12 similar ships sold during the first half of 1922 and with \$31 for 32 similar ships sold during the last half of 1922. The price of vessels stiffened early in 1922, slumped in the summer and early fall, and rose again slightly toward the end of the year. Ship prices are below pre-war values; in 1913 a good cargo vessel could be ordered for around \$35. Current prices are also below reproduction costs; the most recent contracts placed in British yards have been around \$40 to \$45 a ton."

According to the *Journal of Commerce* (New York), investments in new shipping ventures in the United States during 1922 totaled \$67,225,000 as compared with \$60,190,000 in 1921, and \$585,448,000 in 1920. On 12 Sept. 1922 the Government's fleet of 226 war-built wooden ships was sold by the Emergency Fleet Corporation at a private competitive sale for \$750,000 for the entire fleet. These vessels cost, it is said, approximately \$700,000 each to build. The terms of the sale provided that the ships would be promptly dismantled. Three times previously the Government had attempted to sell the wooden fleet, but only one prior bid had been received for it. It was costing the Government \$50,000 a month to take care of the ships. Very soon after the sale of the ships it was announced that the scrapping of them had begun. On 15 March 1923 following the failure of Congress to pass the Ship Subsidy Bill (q.v.), it was announced that the Shipping Board contemplated the sale of some of the vessels under its care to foreign buyers.

Ships Lost in 1922.—According to the annual report of the Liverpool Underwriters Association, 216 vessels, aggregating 407,750 gross tons,

were lost during 1922. Of this number 60, including 37 sailing vessels and 23 steamships of a total of 91,000 tons, were under the American flag. British losses totaled 45 ships aggregating 112,000 tons. The Japanese lost 30 steamships of a total tonnage of 42,027 tons and the rest of the world lost 14 sailing vessels of 21,759 tons and 67 steamships of a total of 140,263 tons. These vessels were all above 500 tons gross.

The losses in 1922 included two from weather damage, 65 foundering and abandonments, 86 strandings, 18 collisions, 26 from fires and explosions and 19 missing. In the same period the partial losses included 492 vessels from weather damage, 1,425 by strandings, 1,818 by collisions, 500 by fires and explosions, 1,041 received a damage to machinery, shafts and propellers and 1,184 from other causes—a total of 6,469 compared with 5,208 in 1921.

In 1921 the number of American sailing vessels lost was 37 with a tonnage of 44,761 and 19 steamships with a total tonnage of 53,734. In the same year the British loss was 12 sailing vessels of 13,174 and 36 steamships of a total of 88,064. This is a total loss for 1921 of 479,119 tons, a decrease in the past year of 71,363 tons. A total of 232 ships were lost in 1921.

Largest Steamships and Steamship Companies.—According to *Lloyd's Register* the largest steamships afloat are the following: *Maesttic*, length overall 956 feet, breadth 100 feet, gross tonnage 56,000; *Leviathan*, length 920 feet, breadth 100 feet, gross tonnage 54,282 (the United States Shipping Board announced in April 1923 that after reconditioning the *Leviathan* had a gross tonnage of 59,956.65, making it the largest ship afloat). *Berengaria*, length 898 feet, breadth 97 feet, gross tonnage 52,022; *Olympic*, length 890 feet, breadth 92 feet, gross tonnage 46,439; *Aquitania*, length 901 feet, breadth 92 feet, gross tonnage 45,647; *Homeric*, length 775 feet, breadth 76 feet, gross tonnage 35,000. According to the same authority the largest steamship companies in the world are: British India Steam Navigation Company, 907,357 gross tons; Furness Lines, 765,027 gross tons; A. Holt and Company, 590,937 gross tons; Ellerman Lines, Ltd., 568,623 gross tons; Nippon Yusen Kaisha, 567,025 gross tons; Compagnie Generale Transatlantique, 527,599 gross tons; Peninsular and Oriental Company, 518,124 gross tons; White Star Line, 458,521 gross tons; Standard Oil Company of New Jersey, 455,367 gross tons; Osaka Shosen Kaisha, 427,475 gross tons; Cunard Steamship Company, 423,511 gross tons. For a history of United States shipping and detailed figures in regard thereto see MERCHANT MARINE, UNITED STATES.

SHIPPING BOARD, United States. See MERCHANT MARINE OF THE UNITED STATES.

SHIP SUBSIDY. Discovering shortly after his inauguration that the great merchant fleet which had been built up by the United States after its entrance into the World War had developed into a "white elephant" on the government's hands, President Harding, on 28 Feb. 1922, appeared before the Congress and urged the enactment, as an amendment to the Merchant Marine Act of 1920, of a measure which came to be known as the Ship Subsidy Bill. This bill authorized the United States Shipping Board

to sell Government owned ships to citizens at public or private sale upon such terms and subject to such conditions as the Board might prescribe, but directed that the payment of the purchase price and interest should not be deferred more than 15 years after the making of the contract of sale and that the interest rate should not be less than 2 per cent per annum. It further provided for the creation of the United States Shipping Board Construction Loan Fund not to exceed \$125,000,000 out of which loans could be made to aid persons, citizens of the United States, in the construction of vessels of the best and most efficient type and in equipping vessels already built with the most modern and efficient machinery and commercial appliances. The bill also provided for a reduction of income taxes on shipping corporations equal to 5 per cent of the goods shipped under the American flag; directed that 50 per cent of all immigrants coming to the United States should be transported in vessels documented under the laws of the United States; established the Merchant Marine Naval Reserve; double tonnage duties and taxes except for sailing vessels of less than 1,000 gross tons and other vessels of less than 1,500 gross tons; and provided for the discontinuance of the army and navy transport service and the diversion of this privilege to private lines under 10 year contracts negotiated by the Secretaries of the Army and Navy. The bill also established the Merchant Marine Fund into which, it was stated, should be paid all tonnage duties and taxes, 10 per cent of the amount of all customs duties and all excess earnings paid by the owner of any vessel. Out of this fund it was provided the Board should pay subsidies on 10 year contracts based on gross tonnage of vessels, nautical miles sailed and speed. These subsidies were to range from one-half to 1 per cent gross ton per 100 nautical miles to two and one-tenth cents. It was estimated that the President's program would cost approximately \$15,000,000 the first year and might eventually cost as much as \$30,000,000 a year. The bill was favorably reported by the House Committee but no further action was taken upon it at that session. In a further effort to secure passage of the measure, President Harding called Congress into extraordinary session on 20 November and on the following day delivered his second message on the subject, which in part was as follows: "The war construction and the later completion of war contracts, where completion was believed to be the greater economy to the public treasury, left us approximately 13,200,000 gross tonnage in ships. The figures are nearer 12,500,000 tons now, owing to the scrapping of the wooden fleet. More than half this tonnage is Government owned, and approximately 2,250,000 tons are under Government operation in one form or another. The net loss to the United States Treasury—sums actually taken therefrom in this Government operation—averaged approximately \$16,000,000 per month during the year prior to the assumption of responsibility by the present administration. A constant warfare on this loss of public funds, and the draft to service of capable business management and experienced operating directors, have resulted in applied efficiency and enforced economies. It is very gratifying to report the diminution of the losses to

\$4,000,000 per month, or a total of \$50,000,000 a year; but it is intolerable that the Government should continue a policy from which so enormous a Treasury loss is the inevitable outcome. This loss, moreover, attends operation of less than a third of the Government owned fleet. It is not, therefore, a question of adding new Treasury burdens to maintain our shipping; we are paying these burdens now. It is not a question of contracting an outlay to support our merchant shipping, because we are paying already. I am not asking your authorization of a new and added draft on the public Treasury; I am appealing for a programme to diminish the burden we are already bearing . . . I am, first of all, appealing to save the Treasury. Perhaps the unlimited bestowal of Government aid might justify the apprehension of special favoring, but the pending bill, the first ever proposed which carries such a provision automatically guards against enrichment or perpetuated bestowal. It provides that shipping lines receiving Government aid must have their actual investment and their operating expenses audited by the Government that Government aid will only be paid until the shipping enterprise earns 10 per cent on actual capital employed, and immediately that when more than 10 per cent earning is reached half of the excess earnings must be applied to the repayment of the Government aid which has been previously advanced. Thus the possible earnings are limited to a very reasonable amount if capital is to be risked and management is to be attracted. If success attends, as we hope it will, the Government outlay is returned, the inspiration of opportunity to earn remains, after transportation by sea is established."

The bill after being amended, passed the House on 29 November by a vote of 208 (204 Republicans; 4 Democrats) to 184 (114 Democrats; 69 Republicans; 1 Socialist) but filibustering tactics prevented it from coming to a vote in the Senate either in the special session or in the regular session which followed and which closed 3 March 1923, when the 67th Congress passed out of existence.

SHOES. See BOOT AND SHOE INDUSTRY.

SHOOTING. See RIFLE-SHOOTING.

SHORTER COLLEGE, a Baptist educational institution for women, founded in 1873 and located at Rome, Ga. In 1922-23 it had a faculty of 25 members, 246 students, property valued at approximately \$500,000 and an income of \$136,000. Daniel James Blocker, M.A., D.D., is president.

SHRADY, Henry Merwin, American sculptor: b. New York, 24 Oct. 1871; d. there, 12 April 1922. He was a son of Dr. George Frederick Shradly, who attended General Grant in his last illness. One of his ancestors was a founder of King's College, now Columbia University. He received his education at Columbia from which he was graduated in 1894. At that time he had no thought of an artistic career. He studied for the bar, but never practised and was engaged in business from 1895 to 1900. During a convalescence from typhoid fever, he took up painting merely as an amusement. His wife, who was Harriet E. Moore, saw the merit in his work and without his knowledge sent several of his paintings to the exhibition of the National

Academy of Design, where they met with high favor and promptly found purchasers. He next tried his skill at sculpture and modeled some small animal figures that met an even more cordial reception than did his pictures. So many orders came that he felt obliged to adopt sculpture as a profession. His successes were the more remarkable in that he had never taken a lesson in drawing or modeling.

In 1901, Mr. Shrady won the competition for an equestrian statue of George Washington to be placed at the Brooklyn end of the Williamsburg Bridge. He also executed equestrian statues of General Williams for Detroit; of General Lee at Charlottesville, Va.; and a statue of Jay Cooke at Duluth. In 1913 the Holland Society awarded him the commission for a statue of William the Silent for Riverside Drive, New York City.

His greatest work, however, is the colossal monument to General Grant, which was unveiled at Washington, D. C., on 27 April 1922, the centenary of the birth of General Grant. He was awarded this commission in 1902. It has been called the most ambitious piece of architectural sculpture ever attempted in America.

SHURTLEFF COLLEGE, a Baptist co-educational institution, founded in 1827 and located at Alton, Ill. In 1922-23 it had a faculty of 18 members, 186 students, property valued at \$650,000 and an income of \$51,755. George M. Potter, A.M., is president.

SIAM, (Sayam, or Muang-Thai), a kingdom of southeastern Asia, bounded on the north by Burma and Tongking, south by the Gulf of Siam and Cambodia, east by Annam and west by Burma. Its area is about 198,900 square miles of which about 45,000 are in the Malay Peninsula. The population is 8,266,408, of whom fully 7,000,000 are Siamese. Bangkok, the chief city, has a population of 931,171 and includes about 200,000 Chinese.

Religion.—The prevailing religion is Buddhism, of which there are 13,616 temples and 87,538 priests.

Education.—The Government primary schools number 402, with 1,026 teachers and 35,045 pupils. Non-Government primary schools number 2,416 with 2,819 teachers and 113,793 pupils. The Government maintains 135 secondary schools with 506 teachers and 10,913 pupils. In addition there are seven non-Government secondary schools with 78 pupils. There are 26 special Government schools with 569 pupils. The Temple schools are very numerous and there are also schools attached to the various Christian missions. The Chulalongkorn University was founded in 1917 at Bangkok with faculties of medicine, literature, political science, engineering and natural science.

Finance.—For the fiscal year 1921-22 the revenue of the kingdom amounted to £6,483,333 and the expenditure to £6,836,048. Extraordinary expenditure against capital account for the same period amounted to £1,429,011. Revenues are derived from the opium trade, land taxes, capitation tax, excise, railways, mines and forests and customs dues. The national debt amounts to £6,633,960, made up of various loans most of which have been expended on works of public utility.

Production and Industry.—Rice is the chief agricultural product and forms a staple export.

It forms also the principal diet of the people. About 6,151,200 acres are planted to rice in normal years. The average annual export of rice is 1,070,000 tons but this was decreased to 277,410 tons in 1921 due to a partial failure of the crop. In the neighborhood of the capital there are 80 rice mills. Irrigation projects are being pushed both by the Government and by private enterprise in the region north of the capital where there are large tracts considered as waste lands until of recent years. The last census of livestock showed 6,294 elephants, 132,675 horses and ponies, 2,620,682 bullocks and 2,508,164 buffaloes. There are extensive forests in Upper Siam and the cutting of teak is an important industry. It is largely in British hands. The dry logs are floated down stream during the rainy season. The exports of teak in 1921 amounted to 71,617 tons valued at \$5,788,768 approximately. Siam was formerly a large exporter of rubber but the output has declined in recent years. However, in the Malay region the planting of rubber trees bids fair to revive the country's position as an exporter of rubber.

The mineral resources of the Kingdom are extensive, including tin, coal, iron, tungsten, wolfram, zinc, manganese and antimony. The mining of tin is well developed on the Island of Puket and at Renong on the mainland. The output of tin averages 8,850 tons yearly.

Commerce.—The bulk of the trade of the Kingdom passes through the capital, Bangkok. In 1921 the failure of the rice crop was reflected in an adverse trade balance. In normal years the trade balance is favorable. Imports in 1921 were valued at \$76,895,530 and exports at \$34,518,800. The chief exports were rice and teak wood; the chief imports: cotton goods, foodstuffs, metal goods and machinery, and tobacco and cigarettes. Most of the exports go to the British Malay States, Hong Kong, and the United Kingdom. These countries and Burma and India also furnish the bulk of the imports.

Shipping and Communications.—In 1921, 571 vessels of 492,812 tons entered the port of Bangkok. There is regular steamer communication between the latter port and the ports of Southern China, with Singapore and the ports of the Malay Peninsula. British, Japanese, French, Norwegian and other vessels make frequent calls. Siam has 1,376 miles of state railways open to traffic. Of this, 591 miles are of standard gauge and 785 miles of metre gauge. Bangkok is connected by rail with the Federated Malay States lines by a line down the Peninsula to Padang Besar. There are a few private lines. Siam has 379 post offices, 89 telegraph offices, two telephone exchanges with 1,228 instruments. There are two wireless stations, one at Bangkok and another at Senggora. Both are under the control of the naval authorities.

Defense.—There is compulsory military service; every able-bodied citizen being liable to two years service with the colors. The army is divided into three army corps. The naval forces include a light cruiser, a few gunboats, three dispatch vessels and one destroyer. There are 5,000 men available for service afloat and a reserve of 20,000. About \$6,500,000 is spent on defense yearly.

Government.—The executive power is exercised by the King, who is advised by a cabinet

consisting of the heads of the Government departments. There is a Legislative Council of 40 members, consisting of the ministers of state and appointees of the Crown. The Council has power to revise, amend, and complete the legislation of the Kingdom. The Kingdom is divided into 18 Monthon or provinces, of which 17 are presided over by a Lord-Lieutenant under whom are several subordinate Governors. These exercise full administrative control over their respective districts. The Bangkok district is under the Minister of Local Government. There are many subdivisions. The reigning King is Chao Fa Maha Vajiravudh, b. 1 Jan. 1881; succeeded to the throne on the death of his father, 23 Oct. 1910. He is styled King Rama VI, being the sixth sovereign of the present dynasty. Each sovereign has the privilege of designating his successor. Of late years Western civilization has made great strides in the Kingdom. There are several foreign advisers and administrators, American, British, French, etc.

SIBERIA, the northern part of Asiatic Russia, comprising nine provinces with a territory of 4,210,420 square miles and a population of 9,257,825. See **RUSSIA**.

SIERRA LEONE, a British Colony and Protectorate lying on the west coast on Africa between Liberia and French Guinea. The area of the colony is 4,000 square miles with a population of 75,572, including 702 whites. The capital is Freetown, with 34,090 inhabitants. There are 170 primary and secondary schools with an average attendance of 6,432. The chief imports of the colony are coal, cotton textiles, tobacco, oil and spirits. The chief exports are ginger, palm kernels, kola nuts, palm oil. Imports in 1920 were valued at £3,548,478 and exports at £2,949,380. Revenue the same year amounted to £999,382 and expenditures to £843,403. The net public debt of the colony is £1,729,848. The Protectorate has an area of 27,000 square miles with a population of 1,327,560. The Governor in 1922 was R. J. Wilkinson and the Colonial Secretary J. C. Maxwell.

SILESIA, the name of a former division of Austria-Hungary, now included in Czechoslovakia, and also of a province of Prussia. Former Austrian Silesia has an area of 1,988 square miles and a population of 763,579. Prussian Silesia (part now of Poland) has an area of 15,573 square miles and a population of 5,225,962 in 1910. After the World War Upper Silesia was the subject of a plebiscite and in 1921 the plebiscite was held. After considerable strife between the German and Polish populations, the boundary was determined by a commission from the League of Nations. Of Upper Silesia Poland received about 2,488 square miles with a population of 1,125,537. The remainder was allotted to Prussia. See **GERMANY**; **POLAND**.

SILK INDUSTRY. For 4,000 years China led the world in silk. In recent years Japan outstripped her in silk-growing, and now America is taking first place in silk manufacture, displacing France. The Chinese production is estimated to have a value of about \$140,000,000 a year, and Japan's nearly double that figure. The United States imports all her raw silk, mainly from Japan. The production is estimated by

seasons, from 30 June to 30 June. In 1921-22 the world's production was 59,437,000 pounds, of which Asia exported 48,740,000, almost all to the United States. The 1922-23 crop is estimated as 63,660,000 pounds. Figured in bales of 132 pounds each, the 1922-23 estimated crop will be divided as follows:

	Bales
Italy.....	52,000
France.....	3,300
Spain.....	1,000
Levant.....	8,300
Japan.....	300,000
Shanghai.....	*68,000
Canton.....	*46,000
India.....	1,470
WORLD PRODUCTION.....	480,070

* These are export figures only. China is estimated to produce nearly as much more for home use

The United States consumption of raw silk for the last three years is in bales: 1920, 232,530; 1921, 341,919; 1922, 366,578. Measured in dollars, the imports of raw silk into the United States during 1922 totaled a fraction over \$300,000,000. These figures indicate a large expansion in the silk manufacturing industry of the country, since the census of 1919, when the raw silk consumed was under 60 per cent of last year's total. Nevertheless, manufacturers and retailers agree that 1921 was a very hard year, though admitting 1922, especially the latter half, was moderately prosperous. The two striking features of the year's business were the unstable condition in prices of raw silk, setting in about April, and the enormous importations from Japan in the first half of the year, exceeding the total importation of 1921. At the close of 1922 the stocks reported at Yokohama were 42,000 bales, and about 25,000 bales in New York, the total visible supply being 178,000 bales, less than the normal.

There are in round numbers 1,000 silk manufacturers in the United States, and 400 establishments doing silk throwing and winding. Their estimated capitalization is \$400,000,000, and they paid out about \$135,000,000 in wages in 1922. In the census year their production was valued at \$688,000,000, in 1921 \$583,268,000, and in 1922 \$700,000,000. About 100,000 broad silk looms are active, and 12,000 ribbon looms, while the producing spindles number about 3,000,000. The broad silk export of 1922 was 3,033,000 yards, valued at \$3,870,000, a slight increase in value and decrease in quantity, as compared with 1921. Over 70 per cent of the exportation was to Canada; Argentina and Mexico being also buyers. The Mexican demand fell off 60 per cent as compared with 1921. The total exports of all kinds of manufactured silk from the United States was nearly \$12,000,000 in 1922. The bulk of the industry is in Pennsylvania, followed by New Jersey, New York, Connecticut and Rhode Island. The prices for raw Japan silks in 1922 ranged from \$7.75 to \$8.25, nearly \$2 better than in 1921, but far below the 1920 figures. The best China raw silks brought \$8.80 as a top figure in 1922, and Italian \$8.50.

The silk trade of America is well organized, there being the Silk Association of America, which has celebrated its 51st birthday; the Broad

Silk Manufacturers of the United States, Ribbon Manufacturers of the United States, Silk Throwsters of the United States, and Silk Travelers' Association. The silk styles of the present year, 1923, are brilliantly colored and figured, there being a great profusion of printed designs. A portion of these are mixed with cotton, and there is a moderate production of artificial silk. During the past year the Federal Trade Commission took strong action against jobbers using the word "Mills" as a part of their corporate name, to give the public the impression they were dealing with first hands.

Artificial silk manufactured in the United States in 1922 totaled 24,406,000 pounds; almost double the amount manufactured in 1921. Imports of artificial silk to 30 Nov. 1922 amounted to 1,857,917 pounds.

SILLIMAN COLLEGE, a Presbyterian educational institution for women, founded in 1852 and located in Clinton, La. In 1922-23 it had a faculty of 10 members, 85 students, property valued at \$75,000, and an income of \$16,673.29. Rev. U. B. Currie, D.D., is president.

SILVER. The Bureau of the Mint, with the co-operation of the Geological Survey, estimated the 1922 production of silver in the United States at 55,510,859 ounces, valued at \$1 per ounce, as provided by the Pittman Act of 23 April 1919, for domestic product. Compared with 1921, this estimate indicates an increase of 2,458,418 ounces. The country's record production of silver occurred in 1915, the figures for that year being 74,961,075 ounces. The production in ounces in 1922 by States and Territories was as follows: Alaska, 652,251; Arizona, 4,198,695; California, 3,119,002; Colorado, 5,951,593; Georgia, 2,933; Idaho, 5,965,098; Illinois, 3,915; Michigan, 361,912; Missouri, 68,351; Montana, 9,601,048; Nevada, 108,027; New Mexico, 657,231; North Carolina, 8; Oregon, 193,121; Pennsylvania, 2,215; South Dakota, 121,757; Tennessee, 75,138; Texas, 601,765; Utah, 15,588,734; Virginia, 6; Washington, 210,885; Philippines, 27,174; total, 55,510,859 ounces. Mexico produced about 65,000,000 ounces and Canada 17,000,000 ounces in 1922.

From 1492, the year of the Discovery of America, to the end of 1920, the world production of silver amounted to 12,573,706,282 ounces fine, having a coinage value of \$16,256,913,158. World consumption in 1922, as well as production, was the largest in many years, due to heavy demands from the Far East, which took about 218,000,000 ounces. World consumption for 1922 is estimated at 307,000,000 ounces, while production is estimated at 207,000,000 ounces. In 1922 many nations seemed still disposed to substitute nickel, aluminum, and base metal alloys for silver in coinage. In Great Britain and Holland the subsidiary coinage was debased and silver coins disappeared in Germany. Nevertheless, it was estimated that a total of about 200,000,000 ounces of silver was held in the reserves of the chief European countries.

The average price of silver in the open market in 1922 was 68 cents, United States gold currency, per fine ounce, as compared with 63.07 cents in 1921. The pre-war average was 55½ cents for the five-year period, 1909-13. American mines received \$1.00 per ounce, the fixed

price under the Pittman Act. The world output for the first three months of 1923 was approximately 56,000,000 ounces, or, at this rate, about 225,000,000 ounces for the year. About 70 per cent of silver comes as a by-product of copper, lead and zinc mines and not from silver mines proper. Depression in the lead, copper and zinc mining industries is at once reflected in the silver output. In March 1923 it was estimated that the world would need about 55,000,000 ounces more of silver than the mines of the world would produce, and the extra silver would have to come from coin meltings, especially in Europe.

Imports of silver to the United States for the year ended 31 Dec. 1922 were \$70,806,653, as compared with \$63,242,671 in 1921 and \$88,060,041 in 1920. Exports amounted to \$62,807,286 in 1922, as compared with \$51,575,399 in 1921 and \$113,616,224 in 1920.

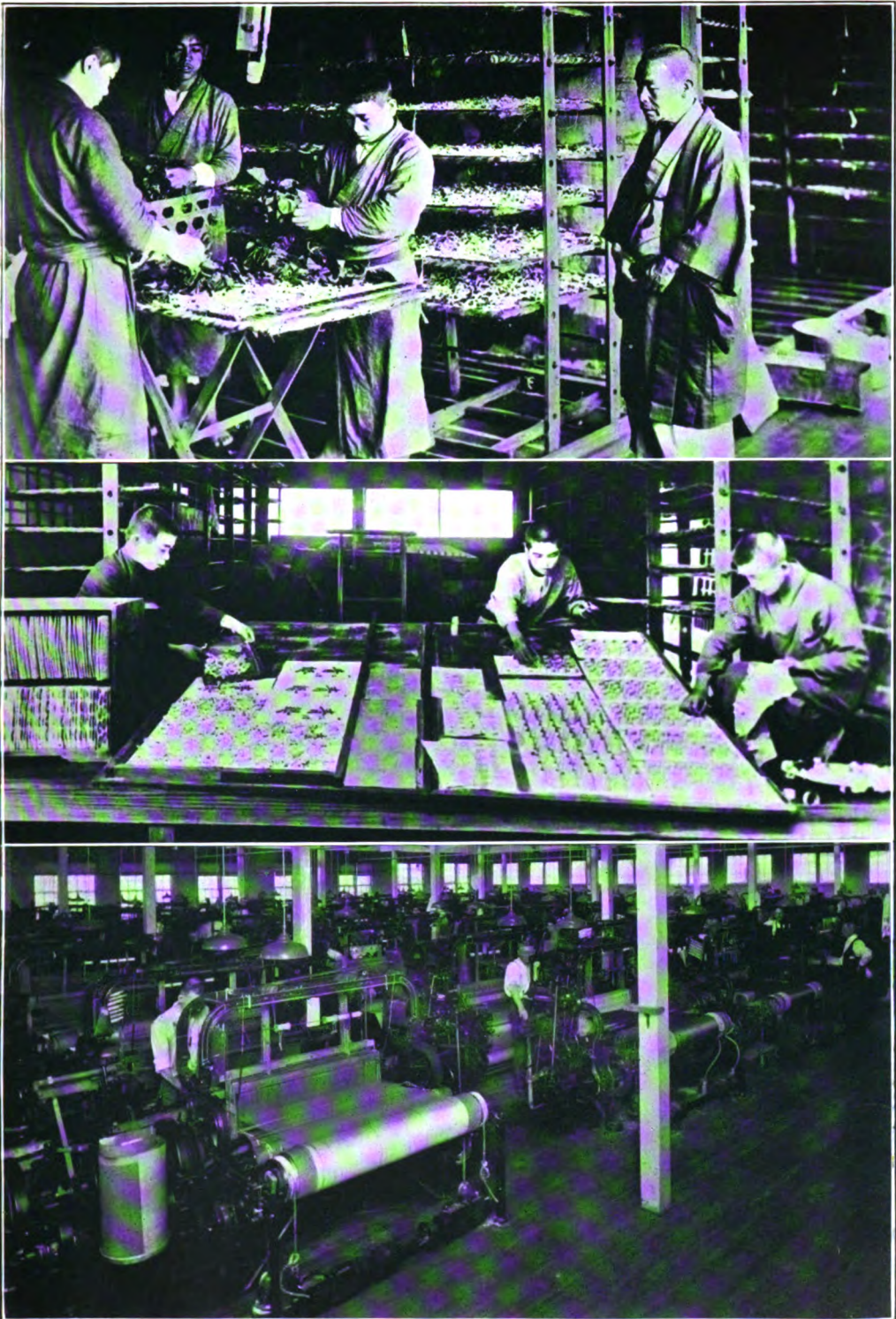
SIMMONS COLLEGE, a Baptist co-educational institution, founded in 1891 and located at Abilene, Texas. In 1922-23 it had a faculty of 35 members, 800 students enrolled up to January 1923, property valued at \$750,000 and an income of \$100,000. Jefferson D. Sandefer, LL.D., president.

SIMMONS COLLEGE, a non-sectarian educational institution for women located at Boston, Mass. It was founded in 1899. Statistics for 1922-23 show a faculty of 121 members, a student enrollment of 1,228, and a property valuation of \$1,535,202.57. The college's income for the year ending 30 June 1922, was \$342,127.73. Henry Lefavour, Ph.D., LL.D., is president.

SIMPSON COLLEGE, a co-educational institution, connected with the Methodist Episcopal Church, founded in 1867 and located at Indianola, Iowa. In 1922-23 it had a faculty of 38 members, 750 students, property valued at \$540,000, an endowment of \$500,000 and an income of \$105,000. John L. Hillman, D.D., is president.

SIMS, George Robert, English journalist, author and playwright: b. London, 2 Sept. 1847; d. there, 5 Sept. 1922. He was author, or part author, of 30 plays, a number of novels, poems, sketches and essays. He was educated at Eastbourne, Hanwell Military College and Bonn. His first attempt at literature was jingling rhymes, 'The Lunatic Laureate' contributed to *Fun*. Next he joined the staff of the *Weekly Dispatch* and five years later became editor of *One and All*. He was one of the founders of *The Referee* and under the name of "Dagonet" contributed a column to this paper every week under the title of "Mustard and Cress." His first acted play was 'Crutch and Toothpick,' an adaptation from Labiche. This was followed by 'The Lights o' London' (1881), his most famous play, and 'The Roman Rye' (1882). 'In the Ranks' (1883) and 'Harbour Lights' (1885) were written with Harry Pettitt. He and Arthur Shirley adapted 'Two Little Vagabonds' from the French (1896). His other plays include 'The Silver Falls' (1888); 'The English Rose' (1890); 'The Trumpet Call' (1891); 'The White Rose'; 'The Lights of Home'; 'The Star of

SILK



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1. Feeding mulberry leaves to silkworms in Japanese raw silk establishment
2. Handling silk moths
3. Weaving room in a modern silk mill

India'; 'Master and Men'; 'The Gypsy Girl,' and the pantomimes 'Puss in Boots' and 'Puss in New Boots.' Among the farces and comedies under his name are: 'Mother-in-law' (1881); 'The Member for Slocum' (1881); 'Flats' for Charles Wyndham (1881); 'The Gay City' (1881); and 'The Half-Way House.' He also wrote a number of extravaganzas, burlesques and comic operas. One of his best known poems was 'Osler Joe.' His books include: 'Dorcas Dene, Detective' (1897); 'Once upon a Christmas Time' (1898); 'In London's Heart'; 'A Blind Marriage'; 'Living London'; 'Among My Autographs'; 'The Life We Live'; 'How the Poor Live'; 'The Dagonet Ballads,' etc. 'My Life' (1917.) The King of Norway gave him the order of Knight of the Royal Norwegian Order of St. Olaf in 1905.

SINGAPORE. See STRAITS SETTLEMENTS.

SINGH, Sir Partab, Regent of Jodhpur, India: b. 21 Oct. 1845; d. Simla, British India, 4 Sept. 1922. He was the second son of Maharajah Takht Singh of Jodhpur, head of the great Rathor clan of Rajputs. From early years he was distinguished for his horsemanship and manly sports of every kind, accomplishments that were of great value to him when he became Dewan in 1878 to his elder brother, the late Maharajah Sir Jeswant Singh. When his nephew, Sir Sardar Singh, succeeded to the title as a minor, he became Regent. In 1902 the Paramount Power selected him as a collateral relative to succeed the Maharajah of Idar, Bombay Presidency, who had died in infancy. Both he and his consort, the benevolent and sympathetic Mahranees Bhadyanyi, who died in 1907, became greatly beloved. Upon the death of his nephew, Sir Sardar Singh, in 1911, Sir Partab was once again called to be Regent of Jodhpur, this time for his grand-nephew, Maharajah Sumer Singh, then 13 years of age. Sir Partab introduced far-reaching reforms in every department of the State of Jodhpur, suppressed crime and in every way possible worked for the benefit of the people. Through the construction of large irrigation works under his administration the country was relieved from famine to which it had been chronologically subject. Internal communications were also developed. His career as a soldier equaled his record as a statesman. He first saw actual service in 1877, when he was attached to the Kabul Mission, headed by the late Sir Neville Chamberlain and he was made Companion of the Order of the Star of India, the first of many honors given him by Queen Victoria, King Edward and King George. When the Northwest frontier was in revolt in 1897-98, he served on the staff in both the Mohmand and Tirah campaigns; and during the latter concealed the fact that he had been wounded until it was discovered by accident. The famous "Sirdar Rissala," or "Jodhpur Lancers," formed and trained by himself, did excellent service under his command in the operations of 1900-01 against the Chinese Boxers. Sir Partab was in charge of the Imperial Service section of the representative body of Indian troops that went to England for King Edward's Coronation. When the World War broke out Sir Partab

"would not be denied his right to serve the King-Emperor in spite of his 70 years"; and he arrived in France accompanied by the youngest of India's princely fighters, his grand-nephew and ward, the Maharajah of Jodhpur, then 16. Subsequently his adopted son and successor at Idar also served at the front. He endured trench warfare but did not like it and frequently said his "great ambition was to die on the battlefield, fighting for the King-Emperor." Of his prowess on the chase and in the saddle many stories are preserved, particularly in the autobiography of Lord Roberts. Even in his advanced years he was cool on a tiger hunt and could play polo with all the dash, courage and staying-power of the youngest. This veteran warrior-statesman so strikingly exemplified the noble ideals of Rajput chivalry, valor and fidelity that for three generations he occupied a unique place in the affections of the British Empire. King George wrote a tribute on learning of his death, in which he added this personal note: "His attendance upon me as *aide-de-camp* during my two visits to India, gave me special opportunities of realizing his noble character and genial companionship."

SIOUX FALLS UNIVERSITY, a Baptist co-educational institution, founded in 1883 and located at Sioux Falls, S. D. In 1922-23 it had a faculty of 15 members, 200 students, property valued at \$138,000 and endowment of \$218,000, and an income of \$61,000. Fred G. Boughton is president.

SKATING. See SPORTS.

SKIDMORE COLLEGE, a non-sectarian educational institution for women, founded in 1911 and located at Saratoga Springs, N. Y. In 1922-23 it had a faculty of 45 members, 390 students, and property valued at \$1,325,000. Income figures not given. Charles H. Keyes, Ph.D., is president.

SLAVONIA. See CROATIA AND SLAVONIA.

SLEEPING-SICKNESS (*encephalitis lethargica*). This disease, according to the United States Public Health Service, is slow in developing and long in duration. The period of convalescence is variable; in some cases recovery is completed within two weeks after the subsidence of the acute symptoms; but in others it is prolonged and leaves its record on the mind, on certain muscles and on the nerves of the cranium. The mental troubles, however, usually pass off eventually. In a bulletin relating to the subject, which was issued in March 1923, Surgeon-General H. S. Cumming of the United States Public Health Service said: "The appearance of encephalitis in epidemic form has, except for one epidemic reported from Austria, always been preceded by an epidemic of influenza. Forty-six per cent of the cases studied by Dr. Smith had had influenza and 54 per cent had not. The influenza-attack rate has been ascribed to the lowering of the vitality of the patients by the influenza; but has also been explained as being really due to another attack of influenza which has invaded the central nervous system of the body. Whether or no there is any connection between the two diseases has not yet been established.

"The United States Public Health Service has no statistics in regard to the prevalence of *encephalitis lethargica*, popularly known as sleeping sickness, that are sufficiently reliable and complete to warrant a statement as to the extent of the disease throughout the United States. The disease is 'reportable' by physicians in comparatively few States; and in the larger part of the country the only data available are based on newspaper reports. Moreover the disease is rather easy to confuse with some other diseases; and its prevalence is therefore likely to be unduly magnified. Thus, in an investigation made by Dr. H. F. Smith, of the Public Health Service, of the 1918-19 epidemic, 22 per cent of the supposed cases had to be excluded as being really cerebro-spinal meningitis, cerebral syphilis, brain abscess, tuberculous meningitis, epilepsy, poliomyelitis, hysteria, or acute alcoholism.

"The disease appears to be only difficultly communicable. Not a single secondary case is known to have occurred in the immediate families of the patients reported in 1918-19, although some 900 persons were exposed.

"The fatality is rather high. Of the 159 cases studied by Smith, death resulted in 46, or 29 per cent.

"It is interesting, though perhaps not significant, that the peak of the outbreak of 1918-19 was reached in New York City in January; in Virginia in February, and in Louisiana, Texas, and Illinois in March. In California the largest number of cases reported in any one month was in April. Whether this progress was related to the season of the year or was merely a result of the spread of the disease is not known. Comparison with the present spread may throw some light on the subject." See also MEDICINE AND SURGERY, ADVANCEMENT OF.

SMALLPOX. See PUBLIC HEALTH SERVICE, UNITED STATES.

SMITH, Alexander, Scottish chemist: b. Edinburgh, 11 Sept. 1865; d. Edinburgh, 9 Sept. 1922. He was graduated from the University of Edinburgh in 1886 and from the University of Munich with the degree of Ph.D. in 1889. He was assistant in chemistry at the University of Edinburgh in 1889-90, and professor of chemistry and mineralogy at Wabash College in 1890-94. He then taught chemistry in the University of Chicago and became director of general and physical chemistry there, and from 1911-21 was head of the department of chemistry at Columbia University, New York. He was a member of the National Academy of Sciences and honorary member, Spanish Society of Physics and Chemistry (Madrid). His 'Laboratory Outline of General Chemistry' and 'Introduction to General Inorganic Chemistry' have been translated into German, Russian, Italian and Portuguese. He also published 'General Chemistry for Colleges' (1898) and 'Text-book of Elementary Chemistry' (1914). The University of Edinburgh gave him the degree of LL.D. in 1919.

SMITH, Delavan, American newspaper publisher: b. Cincinnati, Ohio, 28 Dec. 1861; d. Lake Forest, Ill., 25 Aug. 1922. He was educated at Lake Forest Academy, Lake Forest

College and the Massachusetts Institute of Technology. Mr. Smith became connected with the Indianapolis *News* in 1892, when his father, William Henry Smith, acquired an interest in it, became one of the principal owners of the paper when the elder Smith died in 1896, and for a number of years before his own death was its publisher. Associated with him for several years in the ownership of the paper were his brother-in-law, Charles R. Williams, editor-in-chief from 1892 to 1911, and his cousin, the late Charles Warren Fairbanks, Vice-President of the United States, 1905-09. In May 1909, Mr. Smith and Mr. Williams were indicted on a charge of criminal libel alleged to have been committed in connection with criticisms of the Panama Canal purchase. They successfully resisted an effort to take them to Washington for trial and the case was dropped. Mr. Smith was a member of the American Historical Association, the Chicago Historical Society, and various clubs. He was also vice-president of the Oliver Typewriter Company.

SMITH, Stephen, American physician: b. Skaneateles, Onondaga Co., N. Y., 19 Feb. 1823; d. Montour Falls, near Elmira, N. Y., 26 Aug. 1922. He received an academic education and was graduated in medicine at the College of Physicians and Surgeons, Columbia University, in 1850. Brown University gave him the degree of A.M. in 1876 and the University of Rochester, LL.D. in 1891. He was attending surgeon at Bellevue Hospital, New York, in 1854; professor of surgery, 1861-65 at Bellevue Hospital Medical College; professor of surgery, New York University, 1874; editor of the *New York Journal of Medicine*, 1857-60; editor, *New York Medical Times*, 1860-64; investigated sanitary condition of New York in 1865; United States Commissioner to Ninth International Sanitary Convention, Paris, 1894; and was founder and first president of the American Public Health Association. He served on many boards of health, was commissioner in lunacy and a commissioner of the New York State Board of Charities. His publications include: 'Handbook of Surgical Operations'; 'Principles of Operative Surgery'; 'Doctor in Medicine'; 'The City that Was,' describing conditions in New York before his sanitary reforms; and 'Who is Insane'? He was six months short of being 100 years old. His recipe for longevity was: "Work and keep out of the easy chair; don't eat too much meat; drink lots of milk and get plenty of sleep."

SMITH COLLEGE, a non-sectarian educational institution for women, founded in 1871 and located at Northampton, Mass. In 1922-23 it had a faculty of 227 (including office and library staff), 2,038 students, property valued at \$509,073.49 and an income of \$1,269,020.26. William Allan Neilson, Ph.D., LL.D., is president.

SMITHSONIAN INSTITUTION. The institution was created by act of Congress in 1846, according to the terms of the will of James Smithson, of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an estab-

lishment for the increase and diffusion of knowledge among men."

These purposes the institution carries out by means of research and exploration and by its various series of publications which are distributed throughout the world. During the fiscal year 1922 the institution conducted or co-operated in a number of researches and explorations, among which may be mentioned Secretary Walcott's geological researches in the Canadian Rocky Mountains and Assistant Secretary Abbot's work on the solar constant of radiation. Other lines of work included paleontological researches in various parts of the United States; a botanical reconnaissance of southeastern Asia for the special purpose of collecting the bamboos, many of which are of economic interest; a biological collecting expedition to Australia, which is of special value because the remarkable fauna of that continent is rapidly being exterminated through various causes; two botanical expeditions to Central America; and a number of other explorations.

The institution and its branches published during the year a total of 164 volumes and pamphlets, of which there were distributed 165,196 copies.

The library of the institution received during the year 15,796 additions. This brings the total number of volumes, pamphlets, etc. in the library to 1,079,400.

BRANCHES OF THE INSTITUTION.

National Museum.—Undoubtedly the most important event of the year for the National Museum was the receipt and installation of the Herbert Ward collection of African ethnologica and sculptures. This collection, one of the most important ethnological units in the world, was brought together by Herbert Ward, an Englishman, who was with Stanley on his famous exploring expedition through Africa. It consists of 2,700 ethnological specimens and 19 superb sculptures in bronze of African natives by Mr. Ward.

An actual beginning was made during the year toward establishing the Loeb collection of chemical types, a permanent reference or study collection of new substances and original material resulting from chemical research, funds for the maintenance of which were bequeathed by Prof. Morris Loeb, the eminent chemist, who died in 1912. Two specially constructed cabinets were received from the Chemists' Club of New York and a portion of each of seven new chemical compounds discovered in the United States Department of Agriculture were deposited in the collection. It is planned to solicit all available new chemical material, with the view of eventually making of the Loeb collection a complete series for the use of investigators in chemistry.

The Museum acquired during the year a total of 359,677 specimens. In the department of biology the outstanding feature of the year's accessions is the collection of about 100,000 insects collected by Dr. William Mann in South America, especially eastern Bolivia. Another important collection of insects was that made by Dr. J. M. Aldrich in Alaska, which numbered around 10,000 specimens. A considerable con-

signment of biological material, mostly vertebrates, was received from Mr. Charles M. Hoy, who has been working in Australia under the auspices of Dr. W. L. Abbott. In geology a number of valuable additions were made to the collections, among them specimens of Bolivian tin and tungsten ores from Mr. F. L. Hess; rich examples of carnotite and hewittite presented by the Standard Chemical Co., Naturita, Colo.; and eight gold nuggets donated by Mr. Frank Springer.

The number of visitors to the Natural History Building during the year was 441,604; to the Arts and Industries Building, 262,151; and to the Aircraft Building, 46,380.

National Gallery of Art.—Among the accessions received by The National Gallery during the year was a portrait of President Grant, presented by Mrs. U. S. Grant, jr.; an oil painting entitled "The Signing of the Treaty of Ghent," by Sir A. Forestier, presented to the Smithsonian Institution by the Sulgrave Institution; a painting entitled "Tohickon," by Daniel Garber, provided through the Henry Ward Ranger bequest; and a portrait of Edwin H. Harriman, an artist's proof etching, one of 21 from the copper.

Preliminary steps had been taken at the end of the year toward the acceptance of a rich collection of British masterpieces brought together by the late John H. McFadden, of Philadelphia. The collection comprises 44 notable examples of the work of 19 British artists, and the acceptance of this valuable loan is regarded with much favor.

The first annual meeting of the National Gallery of Art Commission was held on 6 Dec. 1921. Reports of the committees were presented and many important matters relating to the gallery were discussed, among them the urgent need of a National Gallery Building and the problem of the acceptance of proffered works of art while the gallery has for exhibition purposes only the large central hall of the Natural History Building of the National Museum.

Freer Gallery of Art.—The Freer Gallery of Art, an independent unit of the National Gallery of Art, continued work on the collections preparatory to the opening of the gallery to the public in the spring of 1923. This building and the superb collection of Oriental and American art which it was built to house, are both the gift of the late Charles Lang Freer, of Detroit, to the nation, through the Smithsonian Institution. Work during the year included chiefly the classification and cataloguing of Chinese, Japanese, and Tibetan paintings, Chinese tapestries, and Chinese and Japanese pottery; the preliminary classification of Korean pottery and Chinese and Japanese stone sculptures and jades; and the cataloguing of American paintings, drawings, and prints.

Bureau of American Ethnology.—The material culture and ceremonials of the American Indian are being modified so rapidly through contact with the white race that it is imperative for the Bureau to make every effort to record all possible data bearing on the aboriginal Indian culture. The desirability of preserving this material so that accurate knowledge of this interesting and vanishing race may be available for future generations is evident.

Dr. J. Walter Fewkes, chief of the Bureau, continued his successful archeological field-work on the Mesa Verde National Park, Colo., bringing to light a most interesting and instructive ruin which he has named "Pipe Shrine House" on account of the numerous tobacco pipes found on a shrine in the kiva of this ruin. He also excavated and repaired Far View Tower, a round structure 10 feet high, which was probably used for observations of the position of the sun on the horizon at sunrise and sunset, in order to determine the time for planting and other dates important for an agricultural people.

Dr. John R. Swanton continued work on his dictionaries of the Hitchiti and Alabama languages. Mr. J. N. B. Hewitt devoted his time to a number of Chippewa and Ottawa texts, and in continuing the preparation of the second part of his work on Iroquoian Cosmology, the first part of which has already been published by the Bureau. Mr. Francis La Flesche completed and turned in during the year the manuscript of the second volume of his publication on the Osage tribe. Dr. Truman Michelson carried on field-work among the Fox Indians of Iowa, paying special attention to the linguistic relations of this and neighboring tribes. Mr. J. P. Harrington completed his bulletin on the Kiowa language and conducted field-work among the Indians of the Chumashan area of California, laying special emphasis on the place names, material culture, and language.

International Exchanges.—During the year 1922 the packages of scientific and governmental publications sent abroad by the International Exchange Service and received by it from foreign countries totaled 592,600 pounds. Exchange relations were reopened with Rumania and Jugoslavia during the year. Relations were established also with the newly formed governments of Esthonia, Latvia, Lithuania, and Ukrainia. Conditions in Russia and Turkey are not yet sufficiently settled to warrant the exchange of publications previously carried on between the United States and these countries.

The regular schedule of shipments to foreign countries was resumed during the year. To Great Britain and Germany, shipments are made weekly; to France and Italy, semimonthly; and to other countries, monthly.

National Zoological Park.—The year 1922 was one of the most successful since the establishment of the National Zoological Park. The number of visitors exceeded 2,000,000; the collection of animals was larger and more important than ever before; a number of minor improvements were completed and progress made on certain larger projects; and the reservation itself was maintained in excellent condition. The total number of animals on exhibition at the close of the year was 1,681, representing 482 species of mammals, birds, and reptiles. This is not only a larger number of individuals than ever shown before, but also a larger number of different species. One hundred and fifty mammals, birds, and reptiles were born in the park during the year.

Astrophysical Observatory.—In addition to the main observatory, which occupies a number of frame structures within an inclosure of about 16,000 square feet south of the Smithsonian ad-

ministration building at Washington, the Astrophysical Observatory maintains observing stations in three of the most cloudless regions of the earth, Mount Wilson, Calif.; Mount Harqua Hala, Arizona; and Montezuma, Chile.

The outstanding feature of the year's work was the publication of volume IV of the 'Annals of the Astrophysical Observatory,' a quarto volume of 390 pages, which covers in detail the work of the years 1912 to 1920. New instruments and methods of observing are described, and a mass of solar observations is presented and discussed. Many kinds of evidence are given to show solar variability, and reference is made to applications of the results which have been made by several meteorologists.

The observing station erected on Mount Harqua Hala, Arizona, through the generosity of Mr. John A. Roebling, has been much improved owing to the zeal of Mr. A. F. Moore, in charge of the station. Solar constant observations were made on upward of 70 per cent of the days of the year. Comparisons made during and after a visit by the director, Dr. C. G. Abbot, Assistant Secretary of the Smithsonian Institution, show no change in the scale of pyrheliometry, so that the results from this station are comparable with those at Montezuma, Chile. Earlier in the year Dr. Abbot visited the station at Montezuma, where he revised all the adjustments of apparatus and some of the methods employed there.

International Catalogue of Scientific Literature.—The United States Regional Bureau of the International Catalogue of Scientific Literature continued during the year to collect, classify, and index the data relating to American scientific literature, pending resumption of publication, interrupted by the World War. That a method will be found of financing this valuable international enterprise is the confident expectation of the many regional bureaus engaged in the preparation of this index of the world's scientific literature.

C. G. ABBOT,

Assistant Secretary, Smithsonian Institution.

SMYRNA, Capture and Burning of. See NEAR EAST.

SMYTHE, William Ellsworth, American publicist and author: b. Worcester, Mass., 24 Dec. 1861; d. New York, 27 Oct. 1922. He was educated at Worcester. In 1888-90 he was editor of the Kearney (Neb.) *Enterprise* and in 1890-91 of the *Omaha Bee*. In 1891 he founded the National Irrigation Congress of which he was secretary and later chairman. In 1895 he established the New Plymouth Colony, Idaho, and having devoted himself almost exclusively to the question of irrigation lectured extensively on this subject in Western institutions and conducted a popular campaign in California in behalf of radical reform of water laws and the adoption of the Australian system of land settlement. In 1909 he established "Little Landers" of San Diego; in 1913 the "Little Landers" of Los Angeles; and in 1916 (with Charles Weeks) Runnymede, Cal., and also in that year founded "Little Lands in America." From February 1919, he had been interested in reconstruction program to extend the reclamation movement to the entire United States. He contributed to

magazines on his specialty and was the author of 'The Conquest of Arid America' (1900); 'Constructive Democracy' (1905); and 'History of San Diego' (1907).

SOCIALISM. Important victories at the polls for the Labor parties in England and Australia and the fusion of the Social Democrats and Independent Socialists in Germany were the most notable events affecting the status of the Socialist movement of the world in 1922. In Germany delegates from both Socialist groups met at Nuremberg in September and recreated the labor bloc, with 178 members in the Reichstag, representing 11,000,000 Socialist electors. While there prevails a monarchist tendency in Germany, the trade union organizations remain intact and an agreement has been set up between the Socialist trade unions and the Christian organizations of workers. The labor victory in England was clear-cut, 142 Laborites being sent to Commons, forming His Majesty's Opposition for the first time in the history of the country. The essential part of Labor's program, however, consists less of the realization of an immediate Socialist plan than of securing recognition of the rights of labor. In both England and Australia, the lower houses of the Parliaments are composed of three non-Labor groups and a Labor Party. In both the consequent dissipation of non-labor strength has resulted in considerable accretion of strength of labor. In Australia the Labor Party never made the mistake of carrying its internal quarrels to the polls, so it went forward united. Only the Australian system of preferential voting saved the non-labor forces from a debacle. By that system the three non-Labor parties had an advantage. If Labor adheres to its traditional policy of combining with no other party, it cannot form a government in the new House. It will have not more than 30 members in a House of 75.

In the field of international Socialism, of important significance was the meeting at The Hague in December of the executive committees of the Second International, Moderates, and the Vienna Working Union of Socialist Parties, Centrists, at which Arthur Henderson, English labor leader, presided. An outgrowth of the conference was the call for a unity gathering at Hamburg for 21 May. Should the Hamburg conference prove productive of results, it will mean that all Socialist groups outside the Communist or Third International will be united under the same banner for the first time since the Armistice. For the first time in nine years the Hungarian Socialist Party emerged from underground in 1922: it had been subjected to persecution on both hands, by the Communists and the Horthy conservatives, but now makes its official appearance in Budapest. Socialists appear to be gaining slowly in France, where the party had suffered considerably as a result of the Communist split. The moderate Socialists kept the old machinery of the party and the majority of the Parliamentary group, while the Communists retained contact with the masses. However, the old party seems to be gaining new strength. The Radical Socialists, who are its neighbors, have very substantial forces in the provinces.

In the United States, the Socialists devoted

themselves assiduously to the formation of an American Labor Party, built along the lines of the British Labor Party, in which various factions of the labor movement retain their autonomy but combine for the same candidates at the polls. In New York, the Socialist and Farmer-Labor Parties sent out a call for unity and succeeded in enrolling 50 trade-unions under their political banner. At the elections in New York, however, the combined parties received a considerable set-back, which is ascribed in part to the liberal platform of the Democratic Party. Charles P. Steinmetz, Socialist and Farmer-Labor candidate for State Engineer and Surveyor, however, received a remarkable personal vote, polling 291,736 votes, the biggest total ever gathered by a Socialist in that State.

At the Cleveland Conference for Progressive Political Action held in December and attended by delegates representing some of the largest labor unions in the country, the Socialists found themselves considerably outnumbered by those forces opposing an independent political party of labor. They succeeded, however, in bringing up the issue of a united labor candidate for President in the next national elections.

Meyer London, the lone Socialist in the 67th Congress, was defeated but the numerical strength of the Socialist delegation was maintained when Victor Berger, of Wisconsin, won back his seat by more than 3,000 majority. In Wisconsin, the Socialists elected 11 assemblymen and three State senators, giving the party second place in the lower house, with a strong radical LaFollette support in the Senate. In New York, though no Socialists were returned to the State legislature, in 10 assembly districts they established themselves as the second party or forced a Republican-Democratic coalition.

A Socialist gain was made in Vermont where a candidate won a seat in the lower house of the legislature running independently without the support of a Socialist organization. In Minnesota a Socialist gain was reported. Here the Farmer-Labor Party, with a strong admixture of Socialists, controls the State legislature. The gross total of the Socialist Congressional vote for 1922 failed to equal the 1920 presidential vote of 919,799. See also FARMER-LABOR PARTY.

SOCIAL WORK, Family, American Association for Organizing. The American Association for Organizing Family Social Work promotes the organization and development of family social work societies (Associated Charities) throughout the United States and Canada. It offers assistance, through its field secretaries, in the work of organizing and reorganizing societies as well as in the maintenance of programs of work. Its officers are: Mrs. John M. Glenn, chairman; Karl De Schweinitz, vice-chairman; Stockton Raymond, treasurer; Francis H. McLean, field director and David H. Holbrook, executive director. It has its headquarters at 130 East 22d street, New York City.

SOCIAL WORK, National Conference of. See NATIONAL CONFERENCE OF SOCIAL WORK.

SOCIETY ISLANDS. See OCEANIA, FRENCH ESTABLISHMENTS IN.

SOIL PERMEABILITY. See PLANT INDUSTRY, BUREAU OF.

SOLDIERS' BONUS. See AMERICAN LEGION.

SOLVAY, Ernest, Belgian inventor: b. 1839; d. Brussels, 26 May 1922. He was the son of a salt refiner of modest means; but, through his invention of the Solvay process for the manufacture of soda, acquired so large a fortune that he was reputed to be Belgium's richest man. He was frequently called "the Carnegie of Belgium." His invention was threatened at the outset by failure; owing to the persistence of the inventor it was made a success. The first patents were taken out in 1861. Soda in 1863 was costing \$55 a ton. Due to the Solvay process in 1913 soda was reduced to \$20 a ton. During the World War, Mr. Solvay took a prominent part in Belgium relief work and so embittered the Germans that he was sentenced to three months' imprisonment for insulting a German officer. On his 76th birthday King Albert made him a Grand Officer of the Order of Leopold and he also received the Lavoisier Medal of the Institute of France and the Grand Medal of the University of Paris. In his turn he presented \$100,000 each to the Universities of Paris and Nancy and divided \$1,000,000 among Belgian educational and charitable institutions and the employees of his firm, the Solvay Society of Brussels. He was a member of the Belgian Senate; president of the Bureau of International Institute of Bibliography, Brussels; honorary member, Royal Institute of Great Britain, and founder of several international institutes of chemistry and sociology.

SOMALILAND. For the Somaliland Protectorate see article under this head. For the French and Italian possessions in Somaliland, see respectively FRENCH SOMALILAND; ITALIAN SOMALILAND.

SOMALILAND PROTECTORATE, a territory of about 68,000 square miles administered by the British Colonial Office and situated on the Gulf of Aden between Lahadu and Bandar Ziyada. The population numbers about 300,000 Mohammedans. The inhabitants on the coast region are settled but those in the hinterland are nomads. The chief towns are Berbera (30,000); Zevla (7,000); and Bulhar (7,000). Rice, textiles, dates and sugar are the chief imports while hides and skins, gums and resins, cattle and sheep are the chief exports. Transport is by camels. There are four wireless stations. The rupee is the basis of currency and has the same value as in India. The local peace forces comprise a camel corps of 400 and 500 police. The Governor and Commander-in-Chief in 1922 was Sir G. F. Archer.

SONNINO, BARON Sidney Constantino, Italian statesman: b. Pisa, Italy, 11 March 1847; d. Rome, 24 Nov. 1922. His father was Baron Isaac Saul Sonnino, an Italian Jew from Leghorn, and his mother Menhennit Dudley Georgina Sofia Armand Terry, an Englishwoman whom Baron Isaac met in Alexandria, Egypt. By special ordinance of the Department of Justice, Sidney Sonnino's birth, attested by two witnesses, was recorded 17 years thereafter on 13 May 1864 in the official records of the City of Pisa by his father. The elder

Sonnino was accustomed to spend half of the year in Italy and the other half in Egypt. When an epidemic scourged Egypt, Baron Isaac, instead of fleeing the country, remained at his post and soon took charge of the most important institutions in the city, such as the Custom House, banks, and other public services, gaining the confidence of the Egyptian Napoleon, Mohammed-Ali. At the death of Mohammed, and his son, Ibrahim Pasha, Abbas Pasha, who succeeded them, sent home all the Europeans who occupied public offices, and so Baron Sonnino settled in Leghorn.

Sidney was graduated from "Liceo" in 1862, at the age of 15, and soon enrolled as a law student at the University of Pisa, where he finished the four-year courses in three years, thus becoming a doctor of jurisprudence, with full honors, at the age of 18 (July 1865). However, the practice of law was distasteful to him and he soon gave it up. He then decided to enter the diplomatic service. He was sent to Madrid, 5 June 1867, to Vienna, 26 June 1868, to Berlin, 13 Dec. 1868, to Paris, November 1870, and then again to Madrid. Ordered to Petrograd, he refused to go and went home. On 26 April 1873, he resigned, as he did not think himself fit for diplomatic work. In 1876, he started with his friend, Leopoldo Franchetti, an investigation of economic conditions in Sicily, the result of which they published in 1877 in two volumes. Their work was like a thunderbolt to the politicians, who began to fear and admire the two young men. The public press in Italy at that time was in a deplorable condition, and Sonnino decided to start a new publication, patterned after the English *Saturday Review* or *Nation*. On 6 June 1878, the first copy of *Rivista Settimanale* came out, but as there was another magazine of the same name in the field, the title soon was changed to *Rassegna Settimanale*.

Rassegna was an entirely independent weekly; serious and authoritative. Among the first contributors were Carducci, Stecchetti, Panzacchi, Martini, Villari, Fucina, Bartoli, Luzzatti and many other well-known writers and future statesmen. The magazine, however, was too learned for the public in general and therefore was changed in 1882 to a daily, edited by Michele Torraca, under the name of *La Rassegna*. Later Sonnino founded the *Giornale d'Italia*.

On 26 May 1880, Sidney Sonnino entered Parliament, not to go out until 1919. He represented San Casciano in Val di Pesa. His first speech dealt with emigration, and woman and child labor. In 1881 he first advocated universal suffrage. His profound knowledge of finance soon made him a critic of the policy of the then existing cabinet. From 15 Dec. 1893 to 12 June 1894, Sonnino was Minister of Finance and Treasury, and from 14 June 1894 to 5 March 1896, Minister for the Treasury only. Challenging unpopularity and the fierce opposition of his adversaries, he cut deep into the financial sores of the country and succeeded in eliminating the deficit. From 8 February to 27 May 1906 and from 11 Dec. 1909 to 31 March 1910, he was Prime Minister. From October 1914 until 1919 he was Minister for Foreign

Affairs. In September 1919 he retired from public life.

Sonnino was a very silent man. Even when strolling around Pisa with his intimate friend di Jiny, he exchanged but few words. He was more of an English type of statesman than an Italian demagogue. He never went after power by compromising with his principles. He had the courage of the patient, and the patience of the leader waiting for the fatal hour. He was a conservative reformist, and as such was hated by both the extreme Right and the extreme Left. But he did not care. He kept on his own road, always aiming at his final goal, paying no attention to what others would say. All of his political and parliamentary life was a complete devotion to his principles. He did not want to become a party leader, and did not care if his own group had many members or a few. He preferred to remain alone, but never deserted his flag. He was a very learned man. A well-known Dantist, a lover of art, a scholar in economic and financial subjects, he used to spend a good part of his day in his private library in a lonely research for truth and in ideal conversation with the spirits of the great. He never was a politician. He always despised their methods. On 10 March 1883, he criticised Italy's alliance with Austria and Germany, asserting: "Such a policy of alliance is a gratuitous alienation of our liberty; not only it does not benefit our interests, but it places us, hand-and-feet-bound to *designs which are not revealed to us* and to which we are strangers. As there is neither concert nor co-operation, there is not, neither can there be, effective participation in advantages. There is no equality if one is not aware of what the other knows, if one is ready while the other is not. There is neither profit nor dignity in such a situation." He opposed the Triple Alliance throughout.

In the fall of 1914, in order to avoid war, he tried to induce Austria to cede to Italy at least a part of Italia Irredenta, but as Austria did not accede to his proposals, he entered the famous Treaty of London with the Allies. This "Pact" was attacked by President Wilson at Paris, but Sonnino stood by it, stating over and over again Italy's inalienable rights to what is by nature Italian through and through. Sonnino was often misunderstood all over the world, especially in the United States where many persons regarded him as a conservative reactionary diplomat of the old school. Nothing was further from the truth. Sonnino's mind was always open to liberal thoughts.

GIOVANNI SCHIAVO.

SOPHIE NEWCOMB MEMORIAL COLLEGE FOR WOMEN, a non-sectarian educational institution established in 1886 in accordance with donations made by Mrs. Josephine Louise Newcomb, as a part of Tulane University at New Orleans, La. In 1922-23 it had a faculty of 60 members, 628 students, property, including campus, buildings and non-productive assets, valued at approximately \$1,650,000, a productive endowment of \$2,225,000 and an estimated income of \$214,082. Pierce Butler, Ph.D., is dean.

SORGHUM MIDGE. See ENTOMOLOGY, UNITED STATES BUREAU OF.

SORGHUM SYRUP. According to the Department of Agriculture there were 36,532,000 gallons of sorghum syrup produced in the United States during 1922, compared with 45,566,000 gallons produced in 1921 and 49,505,000 gallons produced in 1920. The 1922 crop was valued at \$25,946,000, the 1921 crop at \$28,681,000 and the 1920 crop at \$52,943,000. The acreage for the three years was: 1922, 448,000; 1921, 518,000; 1920, 536,000. The average yield per acre in 1922 was 81.5 gallons and the average price per gallon on 1 December was 71 cents. Alabama led in production with a total yield of 5,994,000 gallons. Kentucky was second with 3,984,000 gallons; Mississippi third with 3,696,000 gallons. North Carolina produced 2,940,000 gallons in 1922; Georgia, 2,490,000; Texas, 2,415,000; Arkansas, 1,792,000; Tennessee, 2,940,000; South Carolina, 1,743,000; Missouri, 1,920,000; Virginia, 1,222,000; Oklahoma, 1,122,000 and West Virginia, 840,000.

SORGHUMS, Grain. According to the Department of Agriculture the production of grain sorghums in the United States in 1922 totaled 90,381,000 bushels, valued at \$79,389,000. These figures compared with a production of 113,990,000 bushels, valued at \$44,575,000 in 1921, and a production of 137,408,000 bushels, valued at \$127,629,000 in 1920. The acreage for the three years was 5,051,000 in 1922; 4,635,000 in 1921, and 5,120,000 in 1920. The average price per bushel of the crop was 87.8 cents in 1922, 39.1 cents in 1921 and 92.9 cents in 1920. Texas led in production with a total yield of 39,400,000 bushels. Kansas was second with 20,260,000 bushels, and Oklahoma was third with 19,575,000 bushels. Production in other States was as follows: Iowa, 144,000 bushels; Missouri, 300,000 bushels; Nebraska, 342,000 bushels; Colorado, 3,705,000 bushels; New Mexico, 1,595,000 bushels; Arizona, 900,000 bushels, and California 4,160,000 bushels.

SOUTH, University of the, a Protestant-Episcopal educational institution for men (co-educational during the summer term) founded in 1857 and located at Sewanee, Tenn. In 1922-23 it had a faculty of 26 members, 263 students, property valued at \$2,000,000 and an estimated income of \$267,129. Benjamin F. Finney, is president and vice-chancellor.

SOUTH AFRICA, Union of, a self-governing British dominion constituted by the Union of South Africa Act of 1909 by which the self-governing colonies of the Cape of Good Hope, Natal, the Transvaal and the Orange River Colony were united in a legislative union, these colonies becoming original provinces of the Union under the names of Cape of Good Hope, Natal, the Transvaal and the Orange Free State.

Population and Area.—The total area of the Union is 473,089 square miles, of which the Cape of Good Hope has 276,966; Natal, 35,284; Transvaal, 110,450; and the Orange Free State, 50,389. The population in 1921 was 6,026,992, of whom 1,522,442 were white and 5,404,550 were colored. The chief colored element is the Bantu, about four-fifths of the colored group.

The seat of the Union Legislature is at Cape Town. The chief cities are: Johannesburg (pop. 149,678 whites; 134,513 colored); Cape Town (112,548 whites; 94,010 colored); Durban (54,230 whites; 86,094 colored); Pretoria (45,163 whites; 28,607 colored); Port Elizabeth (25,940 whites; 19,987 colored), and East London (20,340 whites; 14,251 colored).

Religion.—The latest census statistics give the following adherents of the several denominations among those of European descent: Dutch Churches, 800,178; Anglicans, 265,149; Presbyterians, 60,471; Roman Catholics, 55,552; Wesleyans, 91,199; Lutherans, 20,320; Baptists, 15,507; Congregationalists, 13,176; Jews, 58,741. Of the non-European population the religious affiliations are: Dutch Churches, 204,702; Anglicans, 276,849; Presbyterians, 72,114; Wesleyans, 456,017; Lutherans, 195,308; Hindus, 115,701; Roman Catholics, 37,242; Mohammedans, 45,842.

Education.—There are four universities—the University of Cape Town (806 students); the University of Stellenbosch (584 students); the University of South Africa (composed of five constituent colleges, 730 students) and the Witwatersrand University of Johannesburg (309 students; 1,400 in evening classes). For other than higher education there are in the Union 4,752 schools for whites attended by 292,628 white pupils, and 3,046 schools for colored pupils attended by 221,783 pupils. The total number of teachers is 18,689 and the annual expenditure on these schools averages, £23,000,000.

Finance.—Until 1914 the expenditures of the four Provinces were defrayed entirely by grants from the Union Government. In the year named the Financial Relations Act came into operation and under it certain revenues were assigned to the Provinces and the central grants limited to 50 per cent of the recurrent expenditure of the Provinces. The ordinary revenues of the Union for the year 1922 totaled \$145,750,000, while the ordinary expenditure amounted to \$124,502,690. To this disbursement account must be added \$58,659,000 expenses on the loan account and \$23,216,455 for Provincial administration. The gross public debt of the Union amounted on 31 March 1923 to £191,784,936.

Production.—Wheat growing is on the increase and the corn crop is now one of vast proportions. The yields in the last three years have been lessened by extensive droughts. The wheat crop in 1922 amounted to 438,374,000 pounds and the Indian corn crop to 1,687,867,000 pounds. Other crops of importance are barley, oats, kaffir corn, potatoes and tobacco. The tobacco crop averages about 11,000,000 pounds yearly. Butter and cheese-making are on the increase, great progress having been made since the outbreak of the World War. There are in the Union 5,974,802 cattle, 690,124 horses, 283,980 ostriches, 35,091,980 sheep, 8,960,954 goats and 560,155 swine. The 1922 wool clip amounted to 550,000 bales and the mohair stock to 80,000 bales. Cotton growing is now favored as a drought resisting crop. The yearly crop is now about 2,500,000 pounds of seed cotton. Tea is grown on about 4,000 acres.

Manufactures.—According to figures issued

by the Director of the Census of the Union of South Africa, industrial establishments during the six-year period, 1915–16 to 1920–21, increased from 3,998 to 7,006; the total number of persons employed from 101,178 (39,524 white and 61,654 colored) to 179,838 (62,966 white and 116,872 colored); salaries and wages from £8,913,000 to £21,906,000; and gross value of output from £40,435,000 to £98,302,000.

Of the 7,006 industrial establishments at the close of June, 1921, 1,879 were food and drink establishments, 897 metals and engineering, 888 vehicles, 674 building and contracting, and 668 clothing and textiles. The metals and engineering trades had 18,931 white and 20,066 colored employees; the building and contracting trades, 8,122 white and 23,675 colored; and the food and drink industries, 7,958 white and 26,025 colored. Metals and engineering paid £7,030,000 in salaries and wages; building and contracting, £3,310,000; and food and drink, £2,768,000. The gross value of food and drink output was £36,066,000; metals and engineering, £20,011,000; and building and contracting, £9,122,000. The value of raw materials used by food and drink establishments was £36,066,000; and building and contracting, £9,122,000.

Mining.—Gold, diamonds and coal form the basis of the mineral wealth of the Union. Gold production in 1922 amounted to 7,760,047 fine ounces. There are about 175,000 persons employed in the gold mining industry. Diamond mining showed increased activity during 1922 owing to the demand from America, India, and the East. Several mines that had been closed were reopened and at the close of the year it was anticipated that the large mines would resume operations on a small scale early in 1923. There are about 55,000 persons engaged in the diamond industry. The coal resources of the Union are estimated at 56,200,000,000 tons.

Commerce.—The Union trade returns for the calendar year 1922 showed an excess of exports. The total value of imports during 1922, including imports for government use and imports of specie, were valued at £51,557,371, as compared with £58,201,337 in 1921. General increases over the previous year were recorded during 1922 in the imports of cotton, leather, silk goods, haberdashery, and motor cars. Machinery, implements and hardware indicate a very marked increase.

The value of South African exports in 1922 was £57,025,785, as compared with £57,960,154 in 1921. While these totals show but a slight variation, marked increases and decreases were recorded in many items. Diamonds, Angora hair, hides and skins, whale oil, and wattle bark show appreciable increases, both in volume and value, while the value of wool exported increased by £2,500,000 the volume decreased by 20,000,000 pounds. Raw gold exports decreased by £5,000,000 as did those of corn and coal by £900,000 each.

Communications.—The state railways of the several colonies were operated by the latter prior to the Union. In 1910 these lines were merged into one system, the South African Railways under the control of the central government. There are 9,571 miles open to traffic, of which 4,266 are in the Cape Province, 1,342

in the Orange Free State, 2,644 in the Transvaal, and 1,319 in Natal. There are in addition 507 miles of privately owned railways.

Defense.—All citizens are liable to military service under the Defense Act but in practice only a proportion of the younger men are enrolled yearly. In 1921 the last of the Imperial forces were withdrawn, the Union becoming thereafter responsible for the military administration of its territories.

Constitution and Government.—Legislative power is vested in a Parliament composed of the King, Senate, and House of Assembly. The Governor-General is appointed by the King and with an Executive Council, the members of which are chosen by him, administers the executive affairs of the Union. The Senate has 40 members. Each Senator must be a British subject of European descent, 30 years of age, and resident for five years within the Union and the owner of property of the value of £500. In 1922 the political complexion of the Senate was: 17 South African Party; 13 Nationalists and 2 Labor members. The lower house has 134 members chosen in electoral divisions—51 from the Cape Province; 17 from Natal; 49 from the Transvaal; and 17 from the Orange Free State. The personal qualifications are the same as for members of the Senate, save for the property qualification. Money bills must originate in the lower house. The complexion of the lower house in 1922 was: 74 South African Party; 47 Nationalists; 12 Laborites and one Independent. Pretoria is the seat of government of the Union and Cape Town the seat of the Legislature.

The Governor-General in 1922 was Prince Arthur of Connaught (salary \$50,000 per annum). The Prime Minister and Minister of Native Affairs was the Rt. Hon. Jan C. Smuts (\$17,500). In each Province there is an Administrator appointed by the Governor-General and a Provincial Council elected for three years. These councils deal with local affairs in the Provinces, elementary education, charities, roads and highways, fish and game conservation, etc. The English and Dutch languages are both official.

History.—Early in February a tense situation developed in the Rand mining district due to the strike of gold miners. The strike almost became a revolution in favor of a republic and reached its climax on 11 March 1922. On that day strikers were in control of most of the suburbs of Johannesburg and had been reinforced by mounted commandos of Boer farmers. The fighting lasted four days and there were many casualties on both sides. By 13 March the Government troops were closing in on Johannesburg from all sides and the situation was soon in hand. On 18 March the strike was called off, it had lasted 67 days and had seriously interfered with the output of the precious metals. The Premier in reviewing the outbreak before the Assembly said that the aim of the rioters at Johannesburg was the setting up of a Soviet Republic in South Africa. The government forces lost 50 killed and 237 wounded while the rebels lost 133 killed and 287 wounded. The cost to the Union was placed at \$25,000,000. The Washington treaties were

ratified on 19 July by the South African Assembly. Discovery of a new gold belt in the Transvaal was reported 3 August and a rush of miners followed. A bill granting the vote to women was defeated in the Assembly. The Union's management of the mandate over the former German colony of Southwest Africa was criticised in the Assembly of the League of Nations on 8 September by Delegate Bellegarde of Haiti. It was stated that about 100 of the inhabitants were massacred by bombs dropped from aeroplanes because they refused to pay an excessive dog tax. The reason given was that the natives would hunt and not work. The tax complained of was subsequently reduced. On 27 October Rhodesia voted to remain outside the Union of South Africa. Little inducement had been made to her by the Union and little interest was manifested by the general public. A working agreement was announced as having been concluded on 2 November between the Nationalists and the Labor Party on the basis of both dropping some of their tenets. The coalition of these parties aroused the opposition of Premier Smuts. Toward the close of the year it was said that numbers of American negro emissaries were traversing the former German colonies, and also the French and English colonies everywhere preaching to the negroes that Africa belonged of right to the black races and that it comported not with human dignity to permit oneself to be ruled by a race of another color.

SOUTH AMERICA. See articles on the several independent republics of that continent; also articles on British, Dutch and French Guiana.

SOUTH AUSTRALIA. See AUSTRALIA.

SOUTH CAROLINA, a south Atlantic State, one of the 13 original States, bounded on the north by North Carolina, on the southeast by the Atlantic Ocean and southwest by Georgia. Its area is 30,989 square miles and in 1920 it had a population of 1,683,724. The State is 39th in order of size and 26th in order of population. In 1920 whites numbered 818,538; negroes 864,719, Indians 304 and Asiatics 163. In the same year the foreign-born residents of the State numbered 6,401, and included 1,187 Russians, 1,079 Germans, 491 English and 442 Irish. The chief cities, with their population in 1920 are: Charleston, 67,957; Columbia, the capital, 37,524; Spartanburg, 22,638, and Greenville, 23,127.

Religion.—The principal Christian denominations have an aggregate membership of 794,126. Of this number, 413,630 are Baptists, 278,854 Methodists, 38,361 Presbyterians, 11,000 Episcopalians, 14,788 Lutherans, 9,514 Roman Catholics and 46 members of the Reformed Church.

Education.—Primary education is free, but not compulsory. Certain restrictions are imposed on the employment of illiterate children in factories or mines. There are separate schools maintained for white and colored children. There are 14,824 elementary schools in the State with 9,699 teachers and 478,045 pupils, and 13 high schools with 427 teachers and 12,555 pupils. For purposes of higher education there are the State University at Columbia,

Clemson Agricultural College, Charleston City College, Allen University for Colored Students, Erskine College, Wofford College and several smaller denominational colleges.

Finances.—At the beginning of the fiscal year 1922 the balance on hand in the State Treasury amounted to \$771,753.85. Receipts during the year amounted to \$9,246,434.51. Disbursements during the year amounted to \$8,369,733.60. The bonded debt of the State in 1922 was \$5,382,308.35; the floating debt, \$3,250,000, making a total indebtedness of \$8,632,308.35. The assessed value of real property in 1922 was \$217,972,840; of railroads, \$49,740,781, and of personal property, \$168,286,218.

Agriculture.—The State is agricultural. In 1920 there were 192,693 farms, more than half of which were operated by negroes. The total area under farms was 12,461,945 acres and included 6,206,644 acres of improved land. The value of all farm property in 1920 was \$953,064,742. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 2,062,000 acres, 29,899,000 bushels, \$26,012,000; winter wheat, 165,000 acres, 1,320,000 bushels, \$2,072,000; oats, 406,000 acres, 9,744,000 bushels, \$7,405,000; rye, 6,000 acres, 60,000 bushels, \$108,000; tame hay, 455,000 acres, 455,000 tons, \$7,962,000; sorghum sirup, 21,000 acres, 1,743,000 gallons, \$1,063,000; rice, 8,000 acres, 208,000 bushels, \$239,000; potatoes, 33,000 acres, 2,508,000 bushels, \$3,210,000; sweet potatoes, 104,000 acres, 9,568,000 bushels, \$6,793,000; cotton, 2,058,000 acres, 530,000 bales, \$64,395,000; tobacco, 90,000 acres, 57,600,000 pounds, \$13,248,000; peanuts, 36,000 acres, 27,360,000 pounds, \$1,368,000; apples, 383,000 bushels; peaches, 845,000 bushels, and pears, 104,000 bushels. Livestock raising is on the increase. On 1 Jan. 1923 there were in the State 70,000 horses, valued at \$6,440,000; 209,000 mules, valued at \$25,916,000; 228,000 milk cows, valued at \$7,980,000; 189,000 other cattle, valued at \$2,362,000; 23,000 sheep, valued at \$97,000, and 947,000 swine, valued at \$10,417,000.

Other Products.—About half the area of the State is forested with yellow pine and considerable hardwoods. The cut, however, is diminishing rapidly. The fisheries of the State include oysters, whiting, shad and sea bass. The minerals worked are phosphate rock, clays, granite, gold, silver, manganese, iron ore and lime. In cotton manufactures the State is second only to Massachusetts. There are nearly 5,000,000 spindles in operation in the State. About \$250,000,000 is invested in industry. In addition to cotton, the chief industries are flour and grist milling, tobacco factories and turpentine and rosin factories.

Communications.—The State has 3,804 miles of steam railways and 147 miles of electric railways. The coast is indented with several harbors, of which the most important is that of Charleston.

Government.—The executive is a Governor, elected for two years, who receives a salary of \$3,000. The General Assembly is composed of a Senate of 44 members, elected for four years and a House of Representatives of 124 members, elected for two years. Qualified electors are all citizens of the United States, who have paid their poll tax and are registered. For registra-

tion one must be able to read and write English and to have paid the taxes payable in the previous year on property in the State assessed at \$300 or over.

Officials.—The Governor in 1922 was the Hon. Robert A. Cooper, who was succeeded in January 1923 by the Hon. Thos. G. McLeod, whose term expires 16 Jan. 1925. Other State officials are: Lieutenant-Governor, E. B. Jackson; Secretary of State, W. Banks Dove; Attorney-General, Samuel M. Wolfe; Comptroller, Walter E. Duncan; Treasurer, S. T. Carter, and Superintendent of Education, J. H. Hope.

Judiciary.—Members of supreme court: Eugene B. Gary, Chief Justice; T. B. Fraser, R. C. Watts, T. P. Cothran and J. H. Marion, Associate Justices.

SOUTH CAROLINA, Presbyterian College of. See PRESBYTERIAN COLLEGE OF SOUTH CAROLINA.

SOUTH CAROLINA, University of, a State co-educational institution, founded in 1801 and located at Columbia, S. C. In 1922-23 it had a faculty of 41 members, 692 students, property valued at \$1,787,654, and an income of \$212,989.69. William D. Melton, LL.D., is president.

SOUTH DAKOTA, a west north-central State, bounded north by North Dakota, east by Minnesota and Iowa, south by Nebraska and west by Wyoming and Montana. Its area is 77,615 square miles and in 1920 it had a population of 636,547. South Dakota is 14th in order of size and 37th in order of population among its sister States. In 1920 the population included 619,147 whites, 16,384 Indians, 832 negroes and 184 Asiatics. The foreign-born residents the same year numbered 182,391, and included 15,674 Germans, 16,813 Norwegians, 11,193 Russians, 2,943 English, 1,954 Irish and 1,151 Austrians. The rural population the same year was 84 per cent of the total. The chief cities of the State, with their populations in 1920, are: Sioux Falls, 25,002; Watertown, 9,400; Mitchell, 8,478; Aberdeen, 14,537; Huron, 8,302; Lead, 5,013; Rapid City, 5,777 and Yankton, 5,024.

Religion.—The principal Christian denominations have an aggregate membership of 199,017, of whom 72,113 are Roman Catholics, 46,947 Lutherans, 21,429 Methodists, 9,855 Presbyterians, and 8,852 Baptists.

Education.—Primary and secondary education are free for all children from the age of six to 21 years and from the age of eight to 16 attendance at a public day school is compulsory for all who are not otherwise taught. There are in the State 4,749 elementary schools and 193,311 children of school age. The average attendance is 121.638. There are 421 secondary schools with 1,018 teachers and 12,694 pupils. For higher education there are four normal schools and a School of Mines, an Agricultural College and a State University. Denominational colleges within the State are Huron College, Dakota Wesleyan University, Yankton College and three Indian schools. On 1 July 1921 the permanent school fund invested totaled \$14,227,659.44, while deferred payments on school lands sold amounted to \$13,553,134.78. The total expenditure for public schools in 1921 was \$11,766,530.85. The average salary of male teachers in

that year was \$1,021.43; of female teachers, \$870. The per capita cost of education per total population was \$18.48. The per capita cost per pupil was \$80.16.

Finances.—At the beginning of the fiscal year 1922 the balance on hand was \$6,598,586.60. Receipts during the year amounted to \$20,903,208.12. Disbursements during the same period amounted to \$20,796,613.62, leaving a balance on hand at the beginning of the fiscal year 1923 amounting to \$6,705,181.10. The State has no floating debt, but the following State bonds are outstanding: soldiers' bonus bonds, \$6,000,000; highway bonds, \$6,000,000; total, \$12,000,000. In addition to the above, the State has guaranteed the payment of \$41,500,000 of rural credit bonds and \$500,000 of soldier land settlement bonds, also \$270,000 of bonds for a State cement plant. All of these three enterprises are presumed to be self-supporting. The consideration of South Dakota finances must take into account the State's system of rural credits, through which the State loans money to farmers upon first mortgages at cost. Up to 1 July 1922 the Rural Credit Board of South Dakota had made 9,575 loans, aggregating \$37,901,150, and secured by mortgages on 2,468,300 acres, or an average loan of \$15.35 per acre.

Production and Industry.—The census of 1920 reported 74,655 farms with a total acreage of 34,533,775 and including 19,051,922 acres of improved land. The total value of all farm property the same year was \$2,824,413,768. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 3,861,000 acres, 110,038,000 bushels, \$55,019,000; spring wheat, 2,893,000 acres, 38,188,000 bushels, \$35,133,000; winter wheat, 96,000 acres, 1,824,000 bushels, \$1,678,000; barley, 952,000 acres, 21,896,000 bushels, \$9,196,000; oats, 2,400,000 acres, 74,400,000 bushels, \$23,808,000; buckwheat, 12,000 acres, 96,000 bushels, \$67,000; rye, 439,000 acres, 7,902,000 bushels, \$4,583,000; tame hay, 1,000,000 acres, 1,750,000 tons, \$13,125,000; potatoes, 110,000 acres, 8,580,000 bushels, \$3,775,000, and apples, 263,000 bushels. In recent years dairy and creamery produce, eggs and poultry have assumed large proportions. On 1 Jan. 1923 there were in the State 760,000 horses, valued at \$39,520,000; 14,000 mules, valued at \$952,000; 450,000 milk cows, valued at \$22,950,000; 1,521,000 other cattle, valued at \$44,717,000; 703,000 sheep, valued at \$5,413,000, and 2,283,000 swine, valued at \$30,820,000. The wool clip of 1920 amounted to 4,804,000 pounds. The mineral products of the State include gold, silver, lead, copper, clays and building stones of various kinds. Most of the mineral wealth of the State is in the Black Hills region. In the northwestern part of the State there are considerable coal fields. South Dakota had in 1922 an output of \$6,636,000 in gold and 120,200 ounces of silver, compared with \$6,605,167 in gold and 112,464 ounces of silver in 1921. The Homestake mine paid a dividend of 25 cents a share monthly for the first ten months and increased it to 50 cents a share in November, making a total for the 12 months of \$879,060. The chief manufacturing industries of South Dakota are those connected with agriculture, such as the making of butter, cheese and flour and grist milling. The

value of all manufactures in 1920 was placed at \$62,420,000.

Communications.—The State has 4,276 miles of steam railways and 26 miles of electric railways, 4,205 miles of telegraph lines and 14,586 miles of telephone lines. There are 978 miles of improved State and Federal highways and 1,134 miles of County and State highways, constructed at a total cost of \$8,228,119.09.

Legal Holidays.—1 January; 12 February; 22 February; Memorial Day; 4 July; First Monday in September; 11 November (Armistice Day); 25 December, and every day on which an election or primary election is held throughout the State, and every day appointed by the President of the United States or by the Governor of the State for a public fast, thanksgiving or holiday.

Recent Legislation.—In the matter of recent legislation South Dakota has undertaken several ventures in what some choose to call State Socialism, which, to date, are being prosecuted with success. The chief of these is the rural credit system, the statistics of which are given above under finances; second, the guarantee of bank deposits; third, State insurance of crops against hail; fourth, State coal mining; fifth, \$2,000,000 in State bonds have been authorized for the establishment of a State plant for the manufacture of Portland cement to be used chiefly by the State Highway Commission; sixth, in November 1922 an act was referred to the electors providing for a State hydro-electric plant and the guarantee of its bonds to the extent of one per cent of the assessed valuation.

Charities and Corrections.—The chief State institutions, their locations and the number of inmates in 1922 were: Hospital for Insane, Yankton, 1,125; Home for Feeble-Minded, Redfield, 382; School for Deaf, Sioux Falls, 74; School for Blind, Gary, 36; Tuberculosis Sanitarium, Custer, 220; Penitentiary, Sioux Falls, 191, and Training School (Reform), Plankinton.

Government.—The executive is a Governor, elected for two years, who receives a salary of \$3,000. The legislative power is vested in a Senate and House of Representatives, with special reservations to the electorate; thus, five per cent or more of the electors may propose measures to the legislature or may demand a referendum on laws passed by the legislature before such laws take effect, except emergency measures. The Senate consists of not less than 25 and not more than 45 members, and the House of not less than 75 nor more than 135. The legislature meets biennially on the first Tuesday after the first Monday of January in odd years.

Officials.—Governor, W. H. McMaster; Lieutenant-Governor, Carl Gunderson; Secretary of State, C. A. Burkhardt; Attorney-General, Byron S. Payne; Auditor, Jay Reeves; Treasurer, W. S. O'Brien, and Superintendent of Education, Fred Shaw.

Judiciary.—Members of the Supreme Court: John Howard Gates, Ellison G. Smith, Samuel C. Polley, Frank Anderson and Carl G. Sherwood.

SOUTH DAKOTA STATE COLLEGE OF AGRICULTURE AND MECHANICAL ARTS, a co-educational institution founded in 1883 and located at Brookings, S. D. In 1922—

23 it had a faculty of 102 members, 1,600 students, property valued at \$1,097,380 and an income of \$954,553.16. President, Willis E. Johnson, LL.D.

SOUTH DAKOTA STATE SCHOOL OF MINES, a State institution attended chiefly by men, but to which women are admitted. It was founded in 1885 and is located at Rapid City, S. Dak. In 1922-23 it had a faculty of 17 members, 201 students, property valued at \$400,000 and an income of \$100,000. Cleophas C. O'Hara, Ph.D., LL.D., is president.

SOUTH DAKOTA, University of, a State co-educational institution, founded in 1882 and located at Vermillion, S. Dak. In 1922 it had a faculty of 70 members, 1,239 students (enrollment not figured by school years), property valued at \$870,000 plus 86,000 acres of land with minimum sale value of \$10 per acre, and an income of \$319,500. Robert Lincoln Slagle, Ph.D., LL.D., is president.

SOUTHERN CALIFORNIA, University of, a co-educational institution founded in 1879 and located at Los Angeles, Calif. Although non-sectarian, local control of the university is vested in a board of trustees elected by the Southern California Conference of the Methodist Episcopal Church. In 1922-23 it had a faculty, including special lecturers, assistants and fellows, of 408 members and a total of 6,200 students. Its total assets (book value) amount to \$2,695,064.95. Its income for 1922-23 was estimated at \$1,014,628.90. Rufus Bernhard von KleinSmid, A.M., Sc.D., J.D., D.M.C.P., is president.

SOUTHERN COLLEGE, a Methodist co-educational institution, founded in 1907 and located at Lakeland, Fla. In 1922-23 it had a faculty of 23 members, 200 students, property valued at \$577,626.04 and an income of \$80,000. R. H. Alderman, A.B., is president.

SOUTHERN METHODIST UNIVERSITY, a co-educational institution under the auspices of the Methodist Episcopal Church, South, founded in 1915 and located at Dallas, Texas. In 1922-23 it had a faculty of 101 members, 1,985 students, property valued at \$2,000,000 and an income of \$400,000. James Kilgore was acting president in January 1923.

SOUTHWEST AFRICA, formerly German Southwest Africa, now a Protectorate administered by the Union of South Africa under mandate. It is bounded north by Portuguese West Africa, south by the Cape Province, East by Bechuanaland and west by the Atlantic Ocean. The total area is about 322,400 square miles with a native population of 218,000 and 19,237 Europeans, of whom about 7,000 are Germans. The chief native races are the Ovambos, Herreros, Bergdarmas and Hottentots. The Herreros are excellent stockmen. Stockraising is the chief occupation. There are about 400,000 head of cattle and about 2,300,000 sheep and goats. Since the British occupation 30 schools have been established and are now attended by 1,250 pupils. Revenues in 1922 amount to £891,000 and expenditures to £1,286,529. The staple mining industry is diamonds. These are found along the coast. The stones are small but of great purity.

Copper, gold and silver, vanadium, marble and tin are worked also. Agriculture is being fostered by the Government by means of irrigation. The chief port is at Walvis Bay, where harbor works are being constructed. Windhoek is the capital. It is connected with Cape Town by railway, the journey taking 72 hours. The total railway mileage is 967 of 3½-foot gauge and 98 miles of 2-foot gauge. Construction on the line from the capital to Gobabis, 132 miles, was proceeding in 1922. In addition there are 98 miles of private railway line. The Protectorate is administered from Windhoek. There are 17 districts controlled by magistrates. The chief of the administration is the Governor-General of the Union of South Africa, who delegates his powers to an Administrator, in whom is vested the legislative as well as the executive authority. He is assisted by an Advisory Council of six members. The Administrator in 1922 was Gijbert Reitz Hofmeyr.

SOUTHWESTERN COLLEGE, a Methodist-Episcopal co-educational institution, founded in 1885 and located at Winfield, Kan. In 1922-23 it had a faculty of 42 members, 910 students, property valued at \$1,000,000 and an income of \$140,000. Albert E. Kirk, D.D., is president.

SOUTHWESTERN PRESBYTERIAN UNIVERSITY, a Southern Presbyterian educational institution for men, founded in 1875 and located at Clarksville, Tenn. In 1922-23 it had a faculty of 13 members, 151 students, property valued at \$300,750 and an income of \$62,786.87. Charles E. Diehl, D.D., is president.

SOUTHWESTERN UNIVERSITY, a Southern Methodist co-educational institution, founded in 1873 and located at Georgetown, Tex. In 1922-23 it had a faculty of 32 members, 727 students, property valued at \$1,035,930.94 and an income of \$92,808. Paul Whitfield Horn, LL.D., is president.

SPAIN, a constitutional monarchy of south-eastern Europe, occupying the greater part of the Iberian Peninsula, the remainder being the territory of Portugal. The kingdom has an area of 190,050 square miles, exclusive of the Balearic and Canary Islands and the Spanish possessions in Africa, which bring the total area to 194,783 square miles. Spain has a population of 20,783,844 according to the latest estimates. The kingdom is divided into 49 provinces. The population is homogeneous, except for about 400,000 Basques in the north, some 50,000 gypsies and a few thousand Jews. The chief cities of Spain are: Madrid, the capital, 608,793; Barcelona, 582,240; Valencia, 236,447; Seville, 150,631; Malaga, 136,365; Murcia, 123,936; Zaragoza, 117,742; Cartagena, 102,542; Bilbao, 98,904; Granada, 77,477; Valladolid, 69,799; Lorca, 70,807; Palma, 67,544; and Cadiz, 63,101. In 1920 there was an increase in emigration, 147,918 leaving Spain in that year mostly for South America.

Religion.—The Roman Catholic is the national church of Spain and practically the entire population are adherents of that faith, the exceptions being about 7,000 Protestants, 4,000 Jews, and Freethinkers-Rationalists. The national church has nine archbishops and 47 bishops. The State expends about 47,000,000 pesetas yearly for the maintenance of the clergy and the buildings

of the church. There is full liberty of worship for all religious denominations.

Education.—Primary education is compulsory. There are 11 education districts with the universities as centres. There are 26,108 public schools and 5,669 private schools with 2,604,308 pupils. There are 58 institutions for secondary education with 51,815 students. For higher education there are 11 universities—Barcelona, Granada, Madrid, Murcia, Oviedo, Salamanca, Santiago, Seville, Valencia, Valladolid and Zaragoza. There are 24,501 students in these universities. In addition there are several special schools.

Production.—Agriculture is the chief occupation of the people, about 25 per cent of all those engaged in gainful occupations being occupied with cultivation of the soil. The land is greatly subdivided, there being a very great number of small proprietors. The yield for 1922 of wheat was less than that of 1921 by 500,000 tons. The 1922 barley crop was 300,000 tons less than the 1921 crop. The almond yield for 1922 amounted to 2,500,000 kilos; the raisin crop to 14,000,000 kilos and the grape crop to 1,200,000 kilos, exclusive of wine grapes. Spain has 3,300,000 acres under vines, the yield from which is about 9,000,000,000 pounds of grapes which yield about 700,000,000 gallons of wine yearly. The olive is cultivated in all sections of Spain, except in the Cantabrica region. Andalusia is the centre of the industry. During the World War and in the years following the foreign demand for Spanish olive oil was unprecedented and severe export restrictions were imposed by the Government in order to conserve the supply for this universally used article of diet in Spain. The olive oil production averages 300,000 tons yearly. The production of olives averages 1,500,000 tons yearly. The orange, fig, apple, and banana are the principal fruit crops of Spain, followed in importance by prickly pears and peaches. The value of the orange crop of Spain is over four times that of any other fruit crop, exceeding in value \$10,000,000 yearly. Bananas are raised solely in the Canary Islands, where, according to the latest available statistics, there are 1,803,750 banana trees occupying about 4,500 acres. Eastern Andalusia leads in the production of prickly pears and the Levant provinces hold first place for peach production. Fruit crops of secondary importance are lemons, plums, pears, cherries and pomegranates, each of which amounts approximately to \$500,000 yearly. The almond is by far the heaviest nut crop in Spain, averaging about \$9,000,000, and is followed by chestnuts and filberts, which are produced to an average value each year of about \$3,000,000 and \$2,000,000 respectively. The crop of English walnuts, which has a value of about one-third that of filberts, is produced chiefly in the north and northeastern sections of the country, although English walnuts are grown to some extent in every province except the Balearic and Canary Islands. Peanuts are an unimportant crop in Spain, there being planted but 19,687 acres in 1920. One of the main agricultural pursuits of Spain is the raising of sugar beets. The output of the refineries averages 60,000,000 kilos yearly. Cane sugar is produced on a far lesser scale than beet sugar. There are 24 cane sugar refineries in

the country, nearly all in the provinces of Malaga and Granada. The output of the cane refineries averages 6,000,000 kilos yearly. Spain is comparatively rich in minerals, producing iron, copper, lead, coal, zinc, cobalt, manganese, mercury, silver, phosphorus, sulphur and platinum. The total value of the mineral output in 1920 was 500,984,695 pesetas. There are in Spain 742 establishments with 2,614,500 spindles and 68,300 looms engaged in the manufacture of cotton goods and 8,800 looms and 662,000 spindles engaged in the woolen manufacture. There are 144 paper mills and 37 glass works. Cork manufacture averages 55,000 tons yearly. Sardines, tunny fish and cod are the chief catches of the fishing industry, the average yearly value of which is about 75,000,000 pesetas.

Commerce.—The value of the foreign commerce of Spain for the year 1921 was \$414,766,000, of which the imports represented \$252,278,000 and the exports \$162,488,000. The chief exports were grains, sugar and wines, glassware, pottery, metals and their manufactures, drugs and chemicals, cotton and cotton manufactures, wool, hair and their manufactures, timber and timber manufactures, animals and animal products, and paper. The chief imports were foodstuffs, machinery, vehicles and vessels, drugs, cotton manufactures, timber, animals and tobacco.

Shipping and Communications.—The Spanish merchant marine in 1922 consisted of 581 sailing vessels of 101,285 tons net and 621 steam vessels of 912,817 tons. The chief ports of the Spanish mainland are Bilbao and Barcelona. Spain has 45,972 miles of highways. The total length of the railways is 9,436 miles, of which 6,917 miles are of 5.48-foot gauge and 2,512 miles of metre-gauge mostly. About seven miles are cogwheel and funicular lines. The lines are privately owned but they receive subventions from the state. There are 8,495 post offices; 70,728 miles of telegraph lines; 192 urban telephone systems and 109 interurban systems, with a total number of 70,824 stations. There are ten large wireless telegraph stations.

Finance.—On 26 July 1922, the Spanish budget for the fiscal year 1922–23 was approved. It authorizes an expenditure of 3,044,000,000 pesetas and forecasts an income of 2,617,000,000 pesetas, leaving a deficit of 427,000,000 pesetas. This compared with the fiscal year 1921–22 with actual expenses of 3,630,000,000 pesetas and incomes exclusive of loans of 2,336,000,000 pesetas, leaving a deficit of 1,294,000,000 pesetas. On the same date there was passed a supplementary credit to the Minister of Public Works in the amount of 1,000,000 pesetas, for the improvement of Vigo harbor; a credit amounting to 5,000,000 pesetas for the encouragement of marine communication; and of 2,000,000 pesetas for the Minister of Marine, Fisheries and Naval Service. At the same time tax reorganization laws went into effect which, it was hoped, would increase the revenue by 305,000,000 pesetas. The peseta exchange was steady the latter half of 1922, averaging about 15.55 cents. Savings deposits of the Spanish people are on the increase. The most recent report is of savings amounting to 1,058,000,000 pesetas, an increase of 12 per cent over those of 1920.

At the beginning of the year 1922 the national debt of Spain amounted to 11,963,084,525 pesetas, or about \$2,000,000,000. Of this sum, 910,761,400 pesetas represented the external debt.

Defense.—Military service is compulsory with a term of service extending over 18 years. The peace establishment numbers 189,745 men of all arms, capable of expansion upon mobilization to 300,000. The navy consists of 3 battleships, 6 cruisers, 13 destroyers, 26 modern torpedo boats, 12 gunboats and 28 submarines (some of the last named still building). The naval personnel is fixed at 11,340 sailors and 4,106 marines, with 1,592 officers on the active list and 202 in the reserve.

Constitution and Government.—Spain is a constitutional monarchy, with the executive power vested in the King and the legislative power jointly in the King and the Cortes. The latter is composed of a Senate and Congress, equal in authority. There are three categories of Senators—Senators in their own right, such as the Princes of the royal house, and certain ecclesiastics, life Senators appointed by the Crown, and Senators elected by the Corporations of State. The last named group number 180 and must not be exceeded in number by the first two groups combined. Members of the Cortes are elected for five years, and voting is compulsory for all males over 25 years of age. There are 417 members in the lower house. The reigning King is Alfonso XIII, who succeeded by his birth, 17 May 1886.

History.—A cabinet crisis developed in January following the presentation by Senor de la Cierva to the King of a decree virtually amounting to dissolution of the military juntas or military committees. When the King refused to act the Maura cabinet resigned on 11 January. There was great excitement in the capital in consequence because of the attacks of the juntas upon the War Minister for the policy pursued by him in the campaign in Morocco, notably his refusal to take dictation from them in regard to the choice of those in command. The King consulted several party leaders on the situation. Meanwhile the junta leaders feared to precipitate a clash with the civil authorities, and the Infantry Committee was soon deserted by the other juntas. On 16 January M. Maura resumed the premiership after receiving the submission in writing of the Infantry Committee. Thus the civil power was victorious over the military cabals, which had caused ten changes of ministries since 1917. The life of the new Maura Cabinet was brief. On 7 March the Premier announced that his Liberal colleagues had withdrawn their support and consequently he would resign the Premiership. Senor Sanchez Guerra was summoned to form a new ministry. Public sentiment in Spain at this time was against further warfare in Morocco; the campaign up to this time had been most unsatisfactory. A policy of pacification was resolved upon and efforts were being made to make peace with Raisuli, the insurgent leader. The latter asked that he be made Governor of all the mountain tribes in the western part of the Spanish zone, that all former property held by him be restored, and that he be paid back some millions of pesetas due him for back pay before his

break with Spain. The Premier outlined before the Chamber of Deputies on 14 March the policy his government planned to follow. He promised to do his utmost to restore the constitutional guarantees in Spain and to consult with all Governors of affected Provinces in order to determine where the restoration of rights would be feasible. On 30 March Senor Guerra announced that the King had signed a decree restoring constitutional rights throughout Spain. The suspension of rights had been in force for nearly three years. The question of the tariff on imports was a cause of anxiety to the government. The protectionist policy of Spain had led to a commercial rupture with France, and it appeared expedient to enter less exacting agreements with Great Britain, Italy and France. On 7 April the Cortes authorized the Government to negotiate commercial treaties allowing a 20 per cent rebate of the customs tariff of the second category and an even greater rebate in exceptional cases. On 17 April a commercial agreement was concluded with Italy. The Marquis de Alhucemas, in an address to the Senate on 8 April, announced the formation of a Liberal coalition from all the Groups except that of ex-Premier Romanones. Beginning with the end of March Spain had considerable success in Morocco. On 14 May the bandit Raisuli, who had fled from Tazarut when the Spaniards took that village, sought refuge in the sanctuary of Abdessalam, where he was provisionally safe from attack. Lack of food would, however, soon force his surrender.

A debate on Morocco was held in the Cortes on 2 July. It was generally the opinion that Spain could not evacuate Morocco and that military action should continue. Efforts were made to have the Government establish a civil protectorate. An official report issued 19 June stated that all objectives in Morocco had been attained in the recent fighting there. Despite this announcement the Morocco campaign continued to disturb the people of Spain. General Berenguer, High Commissioner of Morocco, resigned suddenly in July and General Burguete was appointed his successor. It was soon apparent that General Berenguer had resigned merely to have an opportunity to reply publicly to the critics of his administration in Morocco. In the Senate he charged that the disastrous defeats were due to the failure of the Government to ship adequate munitions. The debate lasted through the month of August. The Government was greatly disappointed at the procedure of General Burguete in Morocco, for, instead of curtailing all forward movements and repatriating the troops as had been ordered, he issued fiery proclamations urging the soldiers to recover all Spanish prisoners taken by the Moors and to avenge the death of their comrades. On 22 October a military demonstration was made by Spanish forces near Punta Pescadores on the Moroccan coast, with the object of impressing the insurgent tribesmen. A naval division proceeded at the same time to Ceuta, and with an air force simulated a disembarkation and bombarded the enemy positions for nearly an hour.

A decree abolishing the juntas was read by the Premier at the opening of the Cortes on 14 November. The United Liberals continued their

attacks on the Government, being especially anxious to secure such reforms of the Constitution as would render it impossible for a Ministry to suspend Constitutional guarantees at will, and also to fix the responsibility for the military disasters in Morocco in 1921. On 5 November the Spanish Government denounced the commercial treaty concluded with the United States on 1 Aug. 1906. As it was provided in the body of the treaty that it would be operative for one year after its denunciation by one of the signatories, the treaty expires 5 Nov. 1923. Premier Guerra presented his resignation on 5 December. On the same day the Chamber, sitting as a committee of the whole, resolved to approve a motion demanding the impeachment of the members of the Salazar Ministry for their responsibility for the Moroccan disasters to Spanish arms.

SPANISH LANGUAGE AND LITERATURE. See PHILOLOGY; LITERATURE.

SPITSBERGEN, an archipelago in 10° 35' east long. and 74° 81' north lat., and including Bear Island. The area of the archipelago is about 25,000 square miles. The chief islands are: Mainland or West Spitsbergen; North East Land; Prince Charles Foreland; Edge Island; Barents Land; King Karl's Land; Hope Island; and Bear Island. For over three centuries the islands were visited by sailors of various nationalities engaged in seal and whale fisheries. With the decline of the whaling industry the claims to sovereignty over the islands were allowed to lapse, but the discovery of vast coal deposits recently renewed the question, and on 9 Feb. 1921, at Paris, Norway's sovereignty was recognized by the principal powers of Europe and by the United States. Coal of the Carboniferous, Cretaceous and Tertiary periods has been discovered, but only Tertiary seams are worked. There are three seams of this from 3 to 4 feet in thickness over an area of 460 square miles, with an estimated coal content of 2,000,000,000 tons. Coal shipments can be made only for about three months of the year. Asbestos, gypsum and iron are also found. In the summer of 1921 there were 1,503 persons in the region, which number was reduced in the winter of 1921-22 to 980. Coal shipments in the summer of 1921 amounted to 172,500 tons.

SPITZKA, Edward Anthony, American physician: b. New York City, 17 June 1876; d. Mt. Vernon, N. Y., 4 Sept. 1922. He was educated at The College of the City of New York and took his medical degree at the College of Physicians and Surgeons, Columbia University, in 1902. He was first demonstrator and thereafter professor of anatomy at Jefferson Medical College, Philadelphia, 1904-14; director of Daniel Baugh Institute of Anatomy, Philadelphia, 1911-14, and after 1914 was in private practice as a specialist in nervous and mental diseases in New York City. He performed the autopsy upon and examined the brain of Czolgosz, the assassin of President McKinley, and attended many electrocutions to make detailed observations of the effect of electricity on executed persons. Scientists and others frequently provided that, after death, their brains should be turned over to Doctor Spitzka for scientific study. He was considered one of the greatest brain anat-

mists. His revision of Gray's 'Anatomy' (18th American edition) is held as a great achievement. Doctor Spitzka's researches caused him to go deeply into the field of anthropology, and he studied the brains of Papuans, Negroes, Eskimos, Japanese, etc. From 1898-1906 he was a member of Company I, Seventh Regiment, New York National Guard. During the World War he went abroad as a member of the 311th Sanitary Train, and on his return became chief medical officer of the War Risk Bureau. He was active in planning a huge clinic for ex-soldiers in the Grand Central Palace, New York City. He was a collaborator on many journals of anatomy, anthropology and criminology and also an examiner in lunacy in New York State.

SPORTS. The increase in the number of international competitions and the recognition of women's athletics in America were the significant developments in sports during 1922. Formerly the major golf and tennis tournaments and an occasional boxing match about summed up the yearly athletic relations among nations. The year 1922 told a different story. There were all the old fixtures, such as the Davis Cup matches, and added to them were a host of other contests involving nearly every branch of sport.

An Argentine polo team invaded both England and the United States, a set of games for women were held in Paris in which America took part, an Oxford-Cambridge lacrosse team played a series of matches here, Harvard and Yale sent a combined tennis team abroad, the relay team of the University of Pennsylvania went to England, all the European billiard champions came to this country to compete, an English woman's soccer team played here and in Canada, American swimmers went to Bermuda, the Canal Zone and Hawaii and swimmers from Hawaii returned the visit, an American baseball team toured the Orient, British yachtsmen raced in this country, more golfers and tennis players went to Europe and more European players came here; these were some of the invasions which made 1922 a remarkable year in international sporting annals. Hardly a day during the spring and summer passed which was not marked by some meeting of nations on the athletic field. And in a year where there was so little agreement at the council tables of the world the value of these frequent, friendly meetings can hardly be overestimated.

The other important development—the recognition of women's athletics by the Amateur Athletic Union—was also highly significant, forecasting, as it does, the gathering of the girls and women of the United States with those of other nations.

The immediate effect of the action will be to increase the competition among women in this country. Hereafter, records of women athletes will be standardized and recognized. In the past only records made by school and college girls were accepted and little had been done toward standardizing even these. In the future there can really be representative, national competition among women. Heretofore, America had been behind many of the other countries of the world in this matter, but the action of the Amateur Athletic Union places the women athletes of this

country on an equal footing with those of Europe. Recognition on the part of the Amateur Athletic Union was unquestionably hastened, if not actually brought about, by the showing of the American team which competed in the "Women's Olympics" in Paris. The United States team finished second to Great Britain, leading France, Czechoslovakia and Switzerland.

Another honor fell to American women athletes when the International Women's Sport Federation decided to officially sanction world's records. Forty-nine records were approved and 21 of them had been created by Americans. In the face of these two achievements abroad, it was only fitting that American women athletes should be recognized at home.

Both among women and men, sports become each year more and more a part of the daily life of the average citizen. The truth of this is attested by the great stadiums which have sprung up like mushrooms in every part of the country during the last few years. The year 1922 saw more of these great athletic plants built and projected than had any preceding year.

The New York American League baseball club began work on a stadium in New York City which seats 75,000 persons and cost approximately \$2,000,000. Historic Franklin Field in Philadelphia was the site of a new stadium which will seat 55,000. Ohio State University at Columbus completed the finest stadium in the Middle West and dedicated it before a crowd of 62,000. Chicago has drawn plans for a huge municipal stadium. Vanderbilt University dedicated a great stadium in the South. Dozens of others are being built or planned. Some one has said that Americans enjoy watching games more than they do playing them. These stadiums and the crowds which gather at the professional baseball parks during the diamond season indicate the truth of the statement. The 1922 World's Series offers a concrete example. The total attendance at the series was 185,947 and the total receipts, \$605,475.

The series was decided in five games, the New York Giants of the National League winning from the New York Yankees of the American League with four straight victories. The second game was tied at 3 to 3 when it was called in the 10th inning because of darkness. There were 37,000 breathlessly interested fans in the stand when the contest was abruptly ended. The fans felt that at least one more inning could have been played.

One of the most unusual incidents ever recorded in American sports followed. Kenesaw Mountain Landis, high commissioner of baseball and a former Federal judge, was in a field box and when play stopped he started across the field toward the exit. The crowd seethed out behind him, hissing and cat-calling, shouting that baseball was crooked and that the game had been called so that the magnates might make money from an additional contest.

Commissioner Landis went immediately to his hotel and after a conference with the club owners of the two clubs, announced that the entire proceeds of the game would be given to charity as an evidence of the squareness and good faith of baseball. This promise was kept and the gate receipts of \$120,554 plus interest, were

later divided among three national soldier organizations and twelve New York City charities. Thus did baseball keep faith with the people and prove its right to the prosperous season which it enjoyed. A detailed review of the season follows:

Baseball.—During 1922 baseball proved that it is still America's national game. The sport has never known a more prosperous season. In many major and minor league cities all previous attendance and receipts records were broken. The values of club franchises were naturally increased and it was not surprising to find when Col. T. L. Huston threatened to sell his half interest in the New York Yankees that the club's franchise and property were worth close to \$3,000,000. High class players became more valuable than ever before and the Chicago American League Club set a new high-water mark for a minor leaguer when it paid \$100,000 for Willie Kamm of San Francisco. In the big leagues Heinie Groh was brought to the New York Giants at an expenditure equivalent to \$150,000 and \$250,000 was said to have been refused for another player.

But it was not only at the gate and in the exchequers of the various clubs that baseball records were made in 1922. Old marks made way for new on the diamond proper. "Babe" Ruth failed to equal his home run record of the previous season, but new sluggers came forward to take his place, although none of them equalled his 1921 mark of 59. In the American League Kenneth Williams of the Saint Louis Browns drove out 39 home runs and led the league in this department. Clarence Walker of the Philadelphia Athletics made 37 and Ruth, despite his long suspension early in the season, made 35. George Sisler of Saint Louis led the league in hitting with a percentage of .419 and Ty Cobb of Detroit equalled the major league record by hitting over .400 for the third year in succession.

Rogers Hornsby of the Saint Louis Cardinals proved the sensation of the season by making the highest number of home runs in either league, 42, and batting .401. This was the first time that a National League player had hit over .400 since Ed Delahanty batted his way to a percentage of .409 in 1899.

New York City again monopolized the World's Series and for the second year in succession the Giants won the championship from the Yankees. The victory of the National League club was a decisive one, the Giants winning four games with one resulting in a tie. This was the third time in the history of the World's Series that the losing club failed to win a game.

A remarkable pitching feat was accomplished early in the season by Charles Robertson, a recruit on the Chicago White Sox team, when he pitched a perfect game against Detroit. Not a hit was made off the young pitcher and only 27 batters faced him in nine innings. Jess Barnes, a veteran pitcher of the New York Giants, came close to duplicating Robertson's achievement. Barnes pitched a no-hit game against the Philadelphia Nationals but issued one base on balls and thus marred an otherwise perfect performance.

Urban Faber of the White Sox led the

American League pitchers in effectiveness and Wilfred Ryan of the Giants led the National League in this respect. Faber allowed 2.81 earned runs per nine innings, while Ryan's average was 3. In the matter of victories Joe Bush of the Yankees and Pete Donohue of the Cincinnati Reds were first in their respective leagues. Bush won 26 games and lost 7. Donohue won 18 and lost 9.

Two decisions which were important to baseball were handed down by the Supreme Court during the year. One of them held the reserve clause in players' contracts legal and the other decided that organized baseball was not a trust in violation of the Sherman anti-trust act.

Basketball.—Basketball, which was only 31 years old in 1922, gained favor by leaps and bounds during the year. As a team sport for both men and women it has few rivals and it would be as interesting to know, as it would be difficult to find out, just how many lives there were playing each season. If it were possible to assemble these figures, say for a period of 10 years, they would probably show the greatest growth in popularity that any sport has ever known.

The game has not only secured a hold on this country, but 1922 saw it reaching across the seas and being received with enthusiasm by the French. The game is also being played in England, South America, China, Japan and Rumania.

In the United States the 1922 professional title was won by the Original Celtics of New York. The Eastern Intercollegiate championship went to the Princeton five. Purdue University won the Western Conference title and the Lowe and Campbell team of Kansas City the National Amateur Athletic Union championship.

Billiards.—It is not the rule in sports, but now and again some one who has been counted a "has-been" does come back and in 1922 Willie Hoppe was the man. Hoppe held the world's professional 18:2 balkline billiard championship for 14 years—then lost it. For a season he was just a former champion. In the early part of November of last year, however, he took part in the international tournament in New York City and won back his title from the five greatest billiard players in the world. His opponents were Jake Schaefer of San Francisco, the defending titleholder; Edouard Horemans, champion of Belgium; Roger Conti, champion of France; Erich Hagenlacher, champion of Germany and Welker Cochran, who is rated third among the American players. Hoppe won all five of his matches and conclusively proved that even among the masters of the ivories he is still preeminent. In March 1923 he again successfully defended his title in a match with Schaefer defeating the latter 1,500 to 1,341.

Johnny Layton of Sedalia, Mo., successfully defended his three-cushion crown against Alfredo De Oro. Ralph Greenleaf carried off the diamond medal, emblematic of the national professional pocket billiard championship. These were the other important events in an interesting year on the green baize cloth.

Boxing.—There was no boxing match of World-wide interest, such as the Demoshev-Carpentier contest, during 1922. Jack Dempsey,

the heavyweight champion, spent the year in touring Europe and in fulfilling stage and motion picture contracts. Nevertheless, it was not altogether a lost year among the followers of the sport. While it was not another "battle of the century," Benny Leonard, the lightweight champion, had the time of his life protecting his title from the onslaughts of Lew Tendler. The bout was held at Boyle's Thirty Acres in Jersey City and attracted 70,000 spectators, evidence of the perennial popularity of boxing.

The Leonard-Tendler bout was settled in the ring and Leonard finally won, but another title bout, that between Carpentier and Siki in Paris, is still being debated and apparently will not be settled until it reaches some French court. The referee first announced Carpentier the winner on a foul, then reversed himself and declared Siki the light-heavyweight champion of the World. Siki, a black man from Senegal, soon ran amuck in Paris, and as a result of some of his escapades the French Boxing Federation suspended him and declared the title vacant.

The action of the French Federation in declaring the championship vacant was paralleled by the State Athletic Commission of New York. The New York body ruled that Johnny Wilson and Johnny Kilbane had forfeited the middleweight and featherweight titles respectively by not defending them. Thus, so far as New York State was concerned, new world's champions were made. Mike O'Dowd defeated Dave Rosenberg for the middleweight championship, and Johnny Dundee replaced Kilbane as the featherweight titleholder.

The situation, therefore, at the end of the year was this:

O'Dowd was the world's middleweight champion in New York State. Johnny Wilson of Boston, the former titleholder, still claimed the championship, and Bryan Downey of Cleveland was recognized in Ohio on the strength of his showing against Wilson in a bout in that State. Dundee was the featherweight champion of the world in New York, but Kilbane still held, or rather claimed, the title for the remainder of the world.

Two world's championships also changed hands as the result of actual bouts during the year. Joe Lynch of New York regained the bantamweight championship by defeating Johnny Buff and Mickey Walker won the welterweight championship from Jack Britton.

Amateur boxing had a successful season and some of the most interesting boxing seen during the year occurred in the various amateur tournaments.

Chess.—The International Congress in London was the event of the year in chess. Fittingly enough Jose R. Capablanca, the world's champion, was the winner in this tournament. Alexander Aljechin, the Russian expert, who afterward issued a challenge to Capablanca, was placed second.

America, too, held an international tournament, but it was limited to six competitors. While Edward Lasker of Chicago was first and C. Jaffe of New York second, the sensation of the tournament was little Samuel Rzechewski, the boy wizard of the chess board. This was the most severe test Rzechewski has ever faced, and

he demonstrated that he has the potentialities of a champion by finishing in a four-handed tie for third place with J. Bernstein, D. Janowski and H. R. Bigelow.

The annual tournament of the Western Chess Club was won by Samuel Factor of Chicago. Frank J. Marshall retained the United States title, but agreed during the year to a match in defense of it. The Massachusetts Institute of Technology won in the intercollegiate tournament played late in the year and Columbia defeated Harvard, Yale and Princeton in the thirtieth annual meeting of these four universities.

Football.—If there was any lingering doubt as to the truth of the statement that football is no longer just a piece of college foolishness, but a national sport, the year 1922 dispelled it. Not so much because of the number of fine contests, although there were plenty of those, but because there was more interest on the part of the general public than ever before. There was all the color of the past at the 1922 games, with the rival bands and rival cheering sections, and added to those who came to root were thousands of others who came to watch the games from a pure love of the sport itself.

On one Saturday early in the season 215,000 persons saw five games, and on 18 November, the height of the season, 500,000 watched the big games. There were never enough seats at the important games, such as the Chicago-Princeton match in Chicago, the annual clashes among Yale, Harvard and Princeton and the Army-Navy fixture in the East.

In addition to its gain in popular favor, the game also made progress along other lines during the year. Percy Haughton, the father of the Harvard system, contributed a notable book to the sport; there was an important change in the rules, relative to the point after touchdown, which improved the game from a spectacular and technical standpoint; there were more intersectional contests than ever before; these things, and the high type of sportsmanship which prevailed, made 1922 football's year.

There is no conclusive way to determine the championship of the East, but by common consent among sporting writers Princeton was placed at the top of the list, with Cornell second. Neither of these teams were defeated, but Princeton played a more exacting schedule than Cornell, and added to its prestige by winning the Big Three Championship from Yale and Harvard. Harvard defeated Yale, 10 to 3, in the classic struggle between the Crimson and the Blue.

Close behind Cornell in the ranking of Eastern teams was the eleven from the United States Military Academy at West Point. The cadets, like Princeton and Cornell, were undefeated, but they played two tie games, one against Yale and the other against Notre Dame. The soldiers took their main objective when they humbled their old rivals, the Navy, on Franklin Field, Philadelphia by 17 to 14. It was the first victory for the Army over the Navy since the World War.

The Western Conference season ended in a tie between Iowa and Michigan, with Chicago also undefeated in the conference, but with one

tie game on the records against it. In the far-West the University of California again boasted the outstanding eleven. Nebraska won the championship of the Missouri Valley and in the South, Vanderbilt and Georgia Tech produced strong teams.

Golf.—America came into her own at the old Scotch game of golf during 1922. For the second year in succession an American entrant won the British open championship at Sandwich and, for the first time in the history of the game, it was an American home-bred who turned the trick. Walter Hagen brought the title back, Jim Barnes finished just in his wake tied with George Duncan of England for second place and Jock Hutchison, the 1921 titleholder, was third. Hagen's score was 300 for 72 holes.

Duncan and Abe Mitchell, defeated in their own classic, sought to redeem themselves and Great Britain by coming here and competing in the American open at Skokie, but without success. Gene Sarazen, a mere stripling of 21 years and a former caddie at the Apawamis Club, won the title. Later on Sarazen led the field in the P. G. A. championship and then defeated Hagen in a special 72-hole match for the unrecognized championship of the world.

In addition to the open, the international element was present in the national amateur championship at Brookline, Mass. Practically all of the members of the British team which competed in the Walker Cup play were entered. Again the American players swept the boards. Jess Sweetser, the Yale star, was the victor after shooting some of the most brilliant golf ever seen in an amateur tournament. Cyril Tolley was the last survivor of the British team, going down to defeat at the hands of R. E. Knepper of Princeton. The Americans also scored a decisive victory in the Walker Cup matches.

Miss Glenna Collett, the 19-year old golf wonder of Providence, R. I., repelled the last of the British invasions when she defeated Mrs. W. A. Gavin on the thirty-second green in the final of the women's national championship. Miss Collett also won the Eastern women's title.

Eddie Held of Saint Louis won the first public links championship ever played in the United States. The tournament was held at Toledo, Ohio.

Horse Racing.—Clean, interesting competition and frequent upsets are the facts which stand out in the summing up of the year in the Sport of Kings. Morvich, Benjamin Block's colt which won eleven starts as a two-year old, provided the most sensational upset. Morvich was looked upon as the logical successor to the great Man o' War when the 1922 season opened, but after winning the Kentucky Derby he went wrong. Four defeats, each one marked by a dismal showing on the part of the Block colt, followed in quick succession. Convinced at last that his wonder colt had slipped, Block took him out of training and later sent him to the stud. Contrary to the usual custom in such cases it is expected that Morvich will be brought back to the races in 1923.

The upset of form in the case of Morvich sounded the keynote for the entire racing season. There was a succession of form reversals in all divisions. One week a prospective two-year old

champion would loom on the horizon only to go down to ignominious defeat the next. Such a situation makes it manifestly impossible to choose an outstanding champion. It was the consensus of expert opinion, however, that among the two-year olds W. S. Kilmer's Sally's Alley held a slight edge at the end of the season. Others which showed great promise and won important races were Martingale, a better mud runner than Sally's Alley; Zev; Edict; Enchantment and Blossom Time.

The same complicated situation existed among the three-year olds. Morvich faded twice before the startling speed of Whiskaway. Then Whiskaway was taken to Saratoga and beaten there by Rockminster. Rockminster, in turn, lost to Kai Sang. Lucky Hour, Bunting and Pillory were three others which showed class.

The last named was first among the money winners of the year with \$95,654. Sally's Alley was second with about \$94,000 and Exterminator third with \$71,075. Exterminator, a seven-year old gelding, is now within \$5,261 of equaling Man o' War's record as the greatest money winning race horse in the history of the American turf. Exterminator also ranks fifth among the money winners of the world and is still racing with the dash of a two-year old. "Old Slim," as he has been nicknamed by track devotees, also shares the honor of leading the handicap division for 1922 with Grey Lag.

Charles Lang led the jockeys during the year, piloting 180 winners. M. Fator brought 172 home in front and was second, while T. Wilson was third with 138. Earl Sande did not have so many victories as these three, but was accounted the most consistent jockey of the year and most track followers consider him in a class by himself as a rider.

In England, Sir J. Buchanan's Captain Cuttle, ridden by S. Donoghue, captured the great classic, the Epsom Derby, winning in a canter in the record time of two minutes and 34- $\frac{3}{4}$ seconds. Tamar, owned by Lord Astor was second. In France, Kefalin, belonging to M. Ambatielos won the Grand Prix de Paris.

Harness Races.—In the trotting division the outstanding feature of the year was the lowering by Peter Manning of his own world's record for one mile of one minute and 57- $\frac{3}{4}$ seconds, established at Lexington, Ky. on 6 Oct. 1921 to a new world's record of one minute and 56- $\frac{3}{4}$ seconds, established likewise at Lexington, Ky. on 4 Oct. 1922. Among the pacers, Margaret Dillon on 6 Oct. 1922, at Lexington, Ky., established a record for the best two one-mile heats paced by a mare, by pacing one heat in one minute and 59- $\frac{1}{4}$ seconds and another in one minute and 59 seconds flat. In 1922, the grand circuit season included 14 meetings, at which 274 races were decided. There were 161 events for trotters and 113 for pacers. Prize money distributed during the year amounted to slightly more than \$517,000. The largest individual winner on the circuit was Czar Worthy, with winnings totaling \$22,800.

Polo.—There was no competition between the United States and Great Britain during the year. However, it was not an idle season for either players or ponies. An Argentine team, an Anglo-American team and an all-Ireland

team came to America and competed against some of the strongest combinations that the United States could put together.

The Argentine four had previously played a long series of matches in England and brought the British championship here with them. They added the American open championship to their laurels and then were defeated, in what virtually amounted to a world's title series, by the Meadow Brook "Big Four." The series was decided in two straight matches. The score of the first was 7 goals to 4 and of the second 5 goals to 4. The American players were Devereux Milburn, J. Watson Webb, Thomas Hitchcock, Jr., and Louis E. Stoddard. The Argentine team consisted of David B. Miles, John B. Miles, Jack Nelson and Lewis L. Lacey.

Skating and Ice Hockey.—Three skaters shared the year's honors. They were William Steinmetz of Chicago, Joe Moore of New York City and Roy McWhirter of Chicago. Steinmetz won the international outdoor championship at Saranac Lake and the Diamond Trophy at Lake Placid; Moore won the international indoor at Milwaukee, the Canadian outdoor at Saint John's, N. B., and the Middle Atlantic outdoor at Newburgh, N. Y.; McWhirter won the National outdoor at Plattsburgh and the Western outdoor at Chicago.

Four records were broken. Art Staff of Chicago set new marks for outdoor competition at the quarter-mile, three-quarter mile and two mile distances. Steinmetz still further lowered the three-quarter mile mark.

The leading woman skater of the year was Miss Gladys Robinson of Toronto.

The national amateur hockey championship was won by the Westminster Hockey Club of Boston.

Swimming.—The name of Johnny Weissmuller, the phenomenal 18-year old star of the Illinois A. C., Chicago, just about dominates the review of the swimming season. Weissmuller just about swept the boards at every distance up to 500 meters and at any style. Among the most noteworthy of his achievements was the breaking of the long standing 100-yard record held by Duke Kahanamoku. Weissmuller swam the distance in 0:52 $\frac{3}{4}$, clipping $\frac{3}{4}$ of a second off the former mark. He swam 220 yards in 2:15 $\frac{3}{4}$, 4 and $\frac{1}{2}$ seconds faster than it had ever been done before. He swam 440 yards in 5:05 $\frac{1}{2}$, 8 seconds faster than any other swimmer had ever done it and 500 meters in 6:12 $\frac{3}{4}$, 9 seconds faster than the previous world's record. All these at free style. Weissmuller also broke some back-stroke records, among them the 100 and 150 yard marks.

Great swimmers also appeared among the country's mermaids, and the greatest of these were Miss Gertrude Ederle and Helen Wainwright of New York. Miss Ederle boasted of 15 years when she was making her new world's marks and Miss Wainwright was just one year older. Miss Sybil Bauer of the Illinois A. C. also established some new marks, being particularly speedy at the back-stroke.

Miss Ederle created six new international records in one 500-meter swim, in the course of which she covered 440 yards in 5:54 $\frac{3}{4}$, 22 seconds

faster than any girl or woman had ever swum the distance before. Miss Ederle also won the three and a half mile ocean swim for the Day Cup and defeated Miss Wainwright in this event.

Miss Wainwright swam a mile in 26:44½ during the season, thus cutting the former world's mark by nearly three minutes. She also showed great speed at shorter distances and won many important races, especially in the early part of the outdoor season.

Among the back-stroke records set by Miss Bauer were 1:15 for 100 yards, 3:06½ for 220 and 6:24½ for 440 yards.

Tennis.—Mrs. Molla Bjurstedt Mallory and William T. Tilden 2d, America's two great tennis champions, again swept everything before them in national competition. Tilden did not go abroad during the year to defend his world's championship at Wimbledon, but Mrs. Mallory again voyaged over seas and was once more defeated by Mlle Suzanne Lenglen for the women's world championship. On American courts Mrs. Mallory was still invincible and she captured the American title for the sixth successive year without undue effort. Tilden had to fight harder to retain his laurels and it was only after a closely contested match with William M. Johnston of San Francisco that he carried off his third national championship in a row. Tilden, Johnston and young Vincent Richards of Yonkers, N. Y., were rated in that order among the men players of the United States. Tilden and Richards retained the American championship in doubles.

Interest in tennis has grown so in recent years that it has become necessary to increase the seating capacity at the courts of the West Side Tennis Club at Forest Hills, L. I., where many of the major tournaments played in this country are held. This increased capacity will take the form of a new stadium which will stand as a monument to the growth of public interest in tennis in the United States and, from a more utilitarian viewpoint, comfortably seat 12,000 or more persons.

It was at Forest Hills that the challenge round of the Davis Cup matches was played last summer between the United States and Australia. The American team won, four matches to one. Tilden and Johnston were unbeatable in the singles, but Patterson and Wood won the lone doubles match from Tilden and Richards in straight sets.

Originally there was a record entry of 15 teams for the Davis Cup play. The British Isles, Japan, France, Belgium, Spain, Italy, Canada, Czechoslovakia, Roumania, India, Denmark, Hawaii and the Philippine Islands, beside the United States and Australia nominated teams. In the natural course of events some of these teams were forced to default their matches, but the nominations testify to the importance of tennis as an international sport.

An international conference was held in London late in the year and the tennis world was divided into two zones, European and American, to simplify Davis Cup play in the future. The zoning idea was advanced by the United States through Henry W. Slocum, its representative at the meeting.

Tennis also gained ground among the colleges and universities during the year. Several institutions employed coaches and the tendency in large and small colleges alike was toward a greater recognition of the game.

Track and Field.—The "Women's Olympic Games" in Paris redeemed an otherwise quiet year in this branch of sport. The only bit of international competition of any consequence so far as the United States was concerned, was the trip abroad of the relay team from the University of Pennsylvania. The Quaker quartet came out second best in its race against the Cambridge University four.

Two important world's records were made during the year. The two-mile relay team of the University of Pennsylvania, composed of Brown, Meredith, Holden and McMullen, ran the distance in 7:49½. The previous record was 7:50½. Joie Ray, Chicago distance runner, ran 3,000 meters in 8 minutes, 31½ seconds, thus establishing a new time for the distance indoors.

Charley Paddock, Pacific Coast sprint star, ran some remarkable races during the year and the California Association of the Amateur Athletic Union credited him with 11 new world's records. The national association, however, refused to accept the marks and they will not stand.

It was a bad year all around for Paddock. He failed to come East to defend his sprint title and Bob McAllister, a New York policeman and recognized as the fastest cop in the world, won the 100-yard championship. Al LeConey of Lafayette carried off the 220-yard championship. He also equalled the world's record for 60 yards and won the 100-yard and 220-yard dashes in the intercollegiates.

The best distance runner of the year was William Ritola of New York. Among other events he won the national 10-mile, the national senior cross-country and the metropolitan cross-country titles.

Willie Plant, also of New York, remained supreme among the walkers. He holds all records from one to 15 miles and is unquestionably the greatest walker America has produced in this generation.

S. Harrison Thompson of Los Angeles and Princeton won the Decathlon and E. O. Gourdin of Boston and Harvard the Pentathlon.

Yachting — Rowing — Motor Boating.—Three international events marked the yachting season. Probably the one of greatest general interest in America was the Fishermen's Race held off Gloucester, Mass. The United States entry was the *Henry Ford* and the Canadian, the *Blucnose*. The Canadian boat repeated its success of the previous year, but only after four races had been sailed, one of which was declared no contest.

A team of four British six-meter boats was brought to the United States to compete for the British-American Cup and was defeated by the American team. Six races were sailed on a point basis and the Yankee boats won, 111 to 104.

Later in the season, the *Coila III*, owned by J. G. Stephen of the Royal Northern Yacht Club, sailed a series of races at Marblehead, Mass., against Frank C. Paine's *Sakie*, for the

Seawanhaka Challenge Cup and carried it back to England.

Commodore Harold S. Vanderbilt's *Vagrant* was the most successful of the many yachts which competed in the various regattas sailed during the summer in American waters and, as she won both the Astor Cup and King's Cup, should be accounted the champion schooner of the year. The best sloop was Carroll B. Aiker's *Istalena*.

Walter Hoover's victory in the Diamond Sculls at the Henley Regatta in England brought America into great prominence in rowing. Hoover, who hails from Duluth, Minn., also won the Gold Cup at Philadelphia, but he did not defend his American title on the Schuylkill and the championship went to Paul Costello of Philadelphia. The Naval Academy crew again proved itself the strongest eight in college circles.

Motor boating had a busy year due largely to an improvement in the rules of the sport. The Gold Cup was won by Colonel J. G. Vincent's *Criscraft*. The best time for a runabout was made by Gar Wood's *Baby Gar II*, which averaged 48.95 miles an hour over a course of 150 miles. Edsel Ford's *Wood Fish* made the best time for a short distance by averaging 53.6 miles an hour for five miles.

Miscellaneous.—Jimmy Murphy of Los Angeles was the leading automobile race driver of the year. He won the 500-mile international sweepstakes at Indianapolis and in winning it broke all records for the intermediate distances. He also set a new record for 100 miles during the year. Tommy Milton was another successful driver. He was first in the national championship race, set new marks for 25 and 50 miles and captured the sprint championship at Los Angeles. Sid Haughdahl broke the old records for 1 kilometer and for 5 and 10 miles as his contribution to a race year which was marked with thrilling speed throughout.

Leo Nunes of the New York A. C. retained the national three-weapon championship in fencing. Miss Adeline Gehrig also retained the women's national title. The Scullins Steel Works of Saint Louis won the national soccer title and Princeton was first in the Intercollegiate League.

In the National A. A. U. handball championships played at Milwaukee in March, Arthur Schinner won the senior title and M. Laswell the junior.

Trapshooting, squash and court tennis, cycling, wrestling, fly casting, rifle and game shooting, all these and many minor sports that lack of space makes it impossible to review had a prosperous year filled with keen competition and interesting sport.

M. W. CORUM,

Sports Department, The New York Times.

SPRING HILL COLLEGE, a Catholic educational institution for men, founded in 1830 and located at Spring Hill, Ala. In 1922-23 it had a faculty of 18 members, 250 students, and property valued at \$400,000. Its gross income was approximately \$100,000. Michael McNally, S.J., is president.

STANDARDIZATION. See STANDARDS, NATIONAL BUREAU OF.

STANDARDS, National Bureau of. The Bureau of Standards was established by act of Congress 3 March 1901, and is charged with the development, construction, custody, and maintenance of reference and working standards of measurement, standard constants, standards of quality, standards of performance, and standards of practice.

The first class of standards includes such familiar ones as standards of length, weight, density, the various standards of electrical measurement, heat measurement, etc. As an example of a standard constant may be given the mechanical equivalent of heat, while standards of quality usually take the form of a specification for a given material.

Standards of performance enter into the rating of machinery of all kinds, mechanical devices, and, in fact, every sort of apparatus the efficiency of which can be measured.

Standards of practice are used as the basis of codes and regulations governing the installation and operation of appliances of all sorts.

It will be readily understood that the field covered by the Bureau's work is a very extensive one, and it has been found advisable to group together the experts in various lines entirely independent of the class of standards with which they deal. Thus, there is a division of electricity which handles all subjects in that field, no matter whether they are concerned with electrical measurements, standards of performance of electrical machinery, or standards of practice involving the safe wiring of factories and houses. This is true of every division of the Bureau of which there are 11 in all.

During the past fiscal year, the Bureau has paid particular attention to industrial standardization, the elimination of waste in industries, and the simplification of industrial products. It is not to be understood that less attention has been given to fundamental measurements than heretofore, but every line of work has been carried out with particular reference to its importance in some practical industrial operation. Work of this kind can only be conducted with the close co-operation of the industries, and it is gratifying to record that American manufacturers have given their aid to the Bureau in every possible way.

In considering the work of the past fiscal year, it is believed that more has been accomplished for the money expended than during any similar period in the past. The important standardization work which has been carried out in connection with the paper, textile, ceramic, and automotive industries—to mention only a few of them—is of the first importance and will have a direct effect on the future of almost all manufacturers of such products.

The Bureau's apparatus for accurate measurements, which had got into a somewhat unsatisfactory condition during the war and the period immediately following it, has been placed in first-class shape so that the very highest type of precision work can be undertaken.

A total of 92,568 tests was completed during the year, 62,104 of these being for the government and 30,464 for the public. Besides these tests a large number of investigations have been carried out in all the laboratories.

The results of the Bureau's work are made available through its publications, sixty-seven of which were issued during the year, including an elaborate revised list of all publications issued by the Bureau. These may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

SAMUEL W. STRATTON,
President, Massachusetts Institute of Technology; formerly Director, National Bureau of Standards.

STARS, Measurement of. See ASTRONOMY.

STATES, World Association of. See PEACE AND ARBITRATION, INTERNATIONAL.

STATISTICAL ASSOCIATION, American. The functions of the American Statistical Association are usually the encouragement of statistical research among its members and the making known of these results. Such research is the achievement of individuals or research bureaus, the service of the Association being largely the publication of such research in its *Journal* and the arrangement of an annual meeting at which papers dealing with research are read. Four issues of its periodical, the *Journal of the American Statistical Association*, were published in 1922, embodying 550 pages, containing articles dealing with economics, business, social conditions, demography, population, statistical method and mathematics. The annual meeting, under the presidency of W. S. Rossiter, was held in Chicago, 27-29 December. The program was varied and dealt with trends in prices, business, wages, labor and the standard of living; with population problems and with employment and unemployment. A section was held on the publication of a series of text books on statistical method for purposes of securing better training. The project may be further developed by the executive board. The several committees of the Association were active during the year. The Joint Advisory Committee on the Census, under the chairmanship of W. S. Rossiter, made a printed report of 25 pages. This committee has been very active during the past three years. It was resolved to make such a committee permanent. The Committee on Institutional Statistics, chairman Dr. H. M. Pollock, reported progress on standardization, institutional practice and census. Miss Mary Van Kleeck, chairman of the Committee on Employment Statistics, reported many meetings held in different cities and extended co-operation with Mr. Hoover's committee.

The Association gained slightly in membership—40—its total membership being now 986. Five members died including Dr. Jaques Bertillon. Upon the nomination of the Committee on Fellows, 16 fellows were elected. Four special meetings of the Association were held in New York City, the average attendance being 125. The last meeting on the Business Cycle attracted some attention because of its resumé of the various types of research on this problem.

STEAMBOAT INSPECTION SERVICE. During the fiscal year which ended 30 June 1922, the steamboat inspection force of the United States inspected and certificated 7,543 vessels, with a total gross tonnage of 13,931,877,

of which 7,206 were domestic vessels, with a total gross tonnage of 10,975,357, and 337 were foreign passenger steam vessels, with a total gross tonnage of 2,956,520. Of the domestic vessels there were 5,864 steam vessels, 771 motor vessels, 20 passenger barges, and 551 seagoing barges. There was a decrease of 552 in the total number of the vessels inspected and a decrease of 2,299,124 in the total gross tonnage of vessels inspected as compared with the previous fiscal year. There were 658 cargo vessels examined to carry persons in addition to crew, under the provisions of the Act of Congress approved 5 June 1920. Letters of approval of designs of boilers, engines, and other operating machinery were granted to 31 steam vessels, with a total gross tonnage of 1,016. There were inspected for the United States Government 56 hulls and 1,886 boilers. There were 2,770 re-inspections of steam vessels, motor vessels, and barges. Licences were issued to 26,044 officers of all grades. There were examined for visual defects 7,997 applicants for licenses, of whom 17 were found to be color blind or with other visual defects and were rejected. Certificates of service were issued to 10,253 able seamen, and 924 were rejected. Certificates of efficiency were issued to 17,804 lifeboat men, and 6,714 were rejected.

Steel plates for the construction of marine boilers to the number of 2,259 were inspected at the mills, and a large amount of other boiler material was inspected. There were examined and tested 160,894 new life preservers, of which number 3,356 were rejected. There were 206 balsawood life floats inspected, of which number 10 were rejected. There were inspected 6,113 cork ring life buoys, of which number 118 were rejected. There were inspected at factories 606 new lifeboats, of which number four were rejected. There were inspected at factories 87 new life rafts, all of which passed. There were tested by firing 102 line-carrying guns, all of which passed.

The total number of accidents resulting in loss of life was 231. The total number of lives lost was 266, of which 95 were passengers. Of the lives lost 178 were from suicide, accidental drowning, and other causes beyond the power of the service to prevent, leaving a loss of 88 as fairly chargeable to accidents, collisions, foundering, etc. There was a decrease of 64 in the number of lives lost as compared with the previous fiscal year. Passengers to the number of 235,802,603 were carried on vessels required by law to make report of the number of passengers carried. Dividing this number by 95, the total number of passengers lost, shows that 2,482,132 passengers were carried for each passenger lost. The number of lives directly saved by means of the life-saving appliances required by law was 1,357.

During the year, incident to the economy program, the office of local inspectors at Burlington, Vt., was discontinued, and the work of that district was taken over by the local inspectors at Albany, N. Y.; the office of local inspectors at Apalachicola, Fla., was discontinued, and the work of that district was taken over by the local inspectors at Mobile, Ala., and the office of the supervising inspector of the seventh district, Pittsburgh, Pa., was discontinued, and the work

of the district was taken over by the supervising inspector of the sixth district, Louisville, Ky.

STEEL. See IRON AND STEEL; METALLURGY.

STERLING COLLEGE, a United Presbyterian co-educational institution, founded in 1887 and located at Sterling, Kan. In 1922-23 it had a faculty of 15 members, 215 students, property valued at \$208,865, and an income from endowment and other sources, of \$39,024. Rev. Ross T. Campbell, D.D., is president.

STEVENS INSTITUTE OF TECHNOLOGY, a non-sectarian educational institution for men, founded in 1870 and located at Hoboken, N. J. In 1922-23 it had a faculty, including the teaching staff, of 52 members, 614 students, and property (plant and endowment) valued at \$3,325,000. Income figures for 1922-23 were not available but in 1921-22 they were \$296,902.84. Alexander Crombie Humphreys, M.E., E.D., Sc.D., LL.D., is president.

STEWART, John P.: d. 21 Jan. 1922. See HORTICULTURE.

STINNES, Hugo, German industrialist and financier; reputed to be the richest man in Germany: b. Mulheim, Germany, 12 Feb. 1870, the year of his country's triumph over France. The common impression that he is of Jewish ancestry appears to be inaccurate. His mother was Adeline Coupienne of a Huguenot family that fled to Germany from the persecutions of Louis XIV, while his father, also called Hugo, was the son of Matthew Stinnes who founded the firm of that name at Mulheim. Stinnes himself is classed as "an Evangelical." He belongs to the third generation of a prosperous Rhenish family.

Educated in a real gymnasium, he was sent to Karl Später in Coblenz, there to learn business. He also spent a period as a working miner. In 1889, he attended the School of Mines in Berlin and a year later joined the family firm of Matthew Stinnes in which his mother had one-fifth interest. There he only remained two years, for at the age of 23, he started for himself with a capital of 50,000 gold marks or \$12,500. He was fairly successful and in 1897, his father left him 9,000,000 gold marks or about \$2,000,000. It is estimated that when the war broke out he had increased this fortune to \$10,000,000. He was then rich but by no means so fabulously wealthy as he soon became.

Stinnes has been called the prince of war profiteers. While his assets abroad were sacrificed, he made huge sums of money at home. He sold coal to neutrals at a high price. At the German main headquarters, he was a favorite and thus obtained favorable concession by which he exploited French and Belgium properties in the occupied regions. His assets leaped up to a vast sum, even \$200,000,000 being mentioned.

His business before the war had consisted of coal mining, the chemical treatment of coal, briquettes, iron and steel. A fleet of 13 vessels had carried his products, which included wood and grain, to the Black Sea, the Mediterranean and the Baltic. During the war, his office at Rotterdam was put on the Allies' blacklist. In the Rhineland, he was interested in tramways and the development of electricity. But, with the war, he invested in numerous other undertakings.

He bought, it is said, as many as 60 newspapers, including the *North German Gazette* and the *Münchner Neuste Nachrichten*. He acquired paper factories and printing establishments. He purchased the Esplanade Hotel in Berlin and the Rathaus Hotel and Hamburger Hof in Hamburg. In Charlottenburg, he took over a motor factory. In 1916, he bought out Edward Woermann and so obtained possession of the German East African business of the Hamburg-Amerika and Nord Deutsche Lloyd interests. In 1917, he bought up the ships and warehouses of H. W. Heidmann, a firm founded in 1848. A year later, his son, Hugo, was in charge of a company in Hamburg capitalized at 5,000,000 marks. The capital of his interests on the Rhine and the Elb was then about 615,000,000 marks—and in 1919, Stinnes was responsible for 15.8 per cent of the coal and 13.1 per cent of the coke in the Rhineland and Westphalia. He was also busy picking up properties in Italy, Austria and Russia. Even the Armistice did not injure him for he was handsomely compensated for assets liquidated abroad.

It will thus be seen that Stinnes owes his success to the skill with which he exploited the opportunities which came to him as a result of the war. He sold his products at a high price. When others were ruined, he bought their businesses at a low price. Oils, skin, jute, peat—it mattered not what; all was fish that came to his net. In art and philanthropy, he is but little concerned. Of medium height, sturdy build, black bearded and sallow in complexion, he has lived at the Hotel Adlon in Berlin, a man of few words, seldom mentioned in his own newspapers, seldom addressing the Reichstag where he is a deputy of the People's Party—formerly the National Liberals. It cannot be pretended that he is a popular figure. His way of avoiding the income tax was characteristic. "Take the mines," he said "and run them if you can." A harassed government was in no position to fight him. If "I became a Socialist," he once declared, "I should lose my efficiency."

Stinnes has not been the head of a German Administration though he came near it when Chancellor Cuno was preferred. But he has exercised considerable political influence. In July 1920, he attended the Spa Conference where German coal deliveries were arranged with the Allies and his bearing was regarded as provocative. He denounced the use of "black troops" by France in the Rhineland. In February 1921, he exposed and helped to defeat the counter-revolution in Germany. And in August 1922, he entered into negotiations with Senator de Lubersac, President of the Federation of Co-operative Societies in the French Liberated Regions, the object being a working agreement between German and French industrialists—to include the provision of raw materials and labor by Germany. This scheme, cynically described as "six per cent patriotism" on the part of Stinnes did not commend itself to France, and it fell through.

PHILIP WHITWELL WILSON.

STOCKYARDS ACT. See AGRICULTURE IN THE UNITED STATES, subsection, AGRICULTURAL LEGISLATION.

STOCKYARDS FEVER. See HEMORRHAGIC SEPTICEMIA.

STOCKYARDS RECEIPTS. See AGRICULTURE IN THE UNITED STATES.

STORER, Bellamy, American lawyer and diplomat: b. Cincinnati, Ohio, 28 Aug. 1847; d. Paris, France, 12 Nov. 1922. He was graduated from Harvard University with the degree of A.B. in 1867 and took his M.A. in 1870. During 1869 he was graduated from the Cincinnati Law School and was admitted to the Ohio bar the same year. He served as a member of the 52d and 53d Congresses (1891-95) and in 1897 was appointed Minister to Belgium which post he held for two years. He was then transferred to Spain to which country he was United States Minister until 1902 when he was made Ambassador to Austria-Hungary. This latter post he held until 1906. In 1886 Mr. Storer married Miss Maria Longworth, a daughter of Joseph Longworth and a granddaughter of Nicholas Longworth, one of the founders of Cincinnati.

STORER, Horatio Robinson, American physician: b. Boston, Mass., 27 Feb. 1830; d. Newport, R. I., 18 Sept. 1922. He was graduated from Harvard University A.B. in 1850, A.M., and M.D. in 1853 and LL.B., in 1868. From 1853-55 he studied medicine at Paris, London and Edinburgh. Returning to America during the latter year, he established a practice in Boston. From 1865-69 he was professor of obstetrics and medical jurisprudence in the Berkshire Medical College, where later he delivered post-graduate lectures on gynecology. He was consulting physician of the Newport Hospital and Saint John's Hospital, Providence, R. I. He devised a number of surgical and gynecological instruments and methods. He was life president of the Newport Medical and Natural History Societies, and the Gynecological Society of Boston; Fellow of the American Academy of Arts and Sciences; vice-president in 1868 of the American Medical Association and a delegate in 1887 to the ninth International Medical Congress. In 1871, he was president of the American Medical Editors' Association and also held memberships in various foreign societies. He was editor of 'Obstetric Memoirs of Contributions' of Prof. (Sir) James Y. Simpson, of Edinburgh (with Sir William O. Priestley, of London, 1855). He published 'Criminal Abortion in America' (1859); 'Criminal Abortion, Its Nature, Its Evidence and Its Law' (with F. F. Heard); 'Why Not?—a Book for Every Woman' (1865); 'It Is I?—a Book for Every Man' (1869); 'On Nurses and Nursing'; 'On Insanity in Women.' He received a gold medal from the American Medical Association in 1865 for an essay on "Physical Evils of Forced Abortions" and in 1918 received the gold Liberty Service Medal from the National Institute of Social Sciences for aiding in the control of pestilence among the soldiers and sailors in the United States. On his 91st birthday, the citizens of Newport presented him with a loving cup in recognition of the public health service rendered by him during a period of nearly 50 years.

STORY, George Henry, American artist: b. New Haven, Conn., 22 Jan. 1835; d. New

York City, 24 Nov. 1922. After serving a three years apprenticeship to a wood carver, Mr. Story took up painting and studied first under Charles Hines for three years, and thereafter in Europe for one year. Returning to the United States, he first located at Portland Me., and in 1859, received a medal from that State. In 1862 he established a studio in Washington, where he lived for two years and where he became a friend of President Lincoln, of whom he made sketches, from which in after years he painted several portraits of the martyred President. One of these portraits hangs in the National Museum in Washington, the gift of Mrs. E. H. Harriman. Leaving Washington, Mr. Story took up his residence in New York, which continued to be his home until his death. He was especially a painter of portraits and genre pictures. In 1876 he received a medal at the Centennial Exposition at Philadelphia; from 1889 to 1906 he was curator of the Department of Painting of the Metropolitan Museum of Art, New York, and from 1906 until his death, curator emeritus. During 1904-05 he was acting director at the Museum. He was also from 1899 curator of the Wardsworth Athenaeum of Hartford, Conn. He was President of the New York Artists Fund Society for nine years.

STRAITS SETTLEMENTS, a British Crown colony, comprising Singapore, Penang, Malacca, Christmas Island and the Cocos Islands. Singapore has an area of 217 square miles; Penang, 108 square miles; Province Wellesley, a strip on the mainland under Penang, 280 square miles and Malacca on the Malay Peninsula, about 450 square miles. The population in 1921 was 881,939, of whom about 9,000 were Europeans, 10,000 Eurasians and the remainder Asiatics. The colony is administered by a governor, assisted by an executive council. There is a legislative council of 10 official and eight unofficial members. The revenue in 1920 was £4,954,789 and the expenditure £4,580,370; exports the same year totaled £119,471,984 and imports £148,191,421. The chief exports are tin, pepper, nutmegs, sago, mace, tapioca, hides, horns, rubber, guttapercha, rattans, gums, and copra. The chief imports are cotton textiles, foodstuffs, sugar, tobacco and its manufactured products, coal, animals, hardware, etc. In 1920, 8,737 vessels, exclusive of native craft, entered at the ports of the colony. The aggregate tonnage of these vessels was 11,995,639 tons. The railways of the Federated Malay States extend to Malacca. Woodlands on the Johore Straits is connected with Singapore by rail. All roads are of metre gauge. Singapore and Penang have electric street railway systems. There are two wireless stations. Since 1907 Labuan, area 28½ square miles, has formed part of the colony. Christmas Island exports phosphate of lime, its sole source of wealth.

STRATTON, Samuel Wesley, American physicist and educator: b. Litchfield, Ill., 18 July 1861. He was graduated from the University of Illinois with the degree of B.S. in 1884, and in 1903 received the degree of D.Eng. from the same institution. The degree of D.Sc. was conferred upon him by the Western University of Pennsylvania (now the University of

Pittsburgh) in 1903, by the University of Cambridge, England, in 1909, and by Yale University in 1919. France made him a Chevalier of the Legion of Honor in 1909. From 1885 until 1892 Dr. Stratton was a member of the faculty of the University of Illinois, serving first as instructor in mathematics and thereafter as assistant professor and professor of physics and electrical engineering. He then joined the teaching staff of the University of Chicago with which he was connected as assistant professor, associate professor and professor of physics until 1901 when he was made director of the Bureau of Standards (q. v.) at Washington, D. C. He still held the latter position on 11 Oct. 1922 when he was elected president of the Massachusetts Institute of Technology to fill the vacancy created in November 1921 when Dr. Ernest Fox Nichols, who had been chosen to succeed the late Dr. Richard C. Maclaurin, resigned without taking office. Doctor Stratton entered upon the discharge of his new duties 1 Jan. 1923. During his administration of the Bureau of Standards he built it up from a rather inconsequential branch of the coast service of the Treasury Department, employing only three or four persons, to one of the most useful and highly efficient branches of the Federal government, under the Department of Commerce, with a staff of approximately 1,000 people, including many of the foremost scientists in the country. Under his direction, the Bureau co-operated closely with the aeronautical branches of the Army and Navy and conducted many experiments of the utmost value in solving the problems of aerial navigation. In recognition of his achievements, Doctor Stratton has been awarded the Elliott Cresson medal by the Franklin Institute and the welfare medal by the National Academy of Sciences. Aside from his work as director of the Bureau of Standards, Doctor Stratton's governmental activities have covered a wide field. He was a member of the interdepartmental board of the Council of National Defense, member of the board on ice observation and patrol and secretary of the National Advisory Committee for Aeronautics. He has long been interested in naval affairs. From 1895-1901 he served as ensign, lieutenant, junior grade; lieutenant and lieutenant-commander of the Illinois Naval Militia. During the Spanish-American War he served as a lieutenant in the United States Navy from May to November, 1898, and from 1904-12 he commanded the Naval Militia of the District of Columbia. Doctor Stratton is a member of the International Committee on Weights and Measures, member of the American section of the Standardization Committee of the International Chamber of Commerce, member of the American Institute of Electrical Engineers, member of the American Society of Mechanical Engineers, member of the American Physical Society, member of the American Philosophical Society, member of the American Association for the Advancement of Science and member of the National Academy of Sciences. He is a member, also, of the Cosmos, Chevy Chase and Army and Navy clubs of Washington.

STRAWBERRIES. See HORTICULTURE.

STRAW HATS, Manufacture of. According to the reports to the Bureau of the Census, in 1921 there were in the United States 110 establishments engaged primarily in the manufacture of straw hats, as compared with 143 such establishments in 1919, and 132 in 1914. The value of the products in 1921 amounted to \$28,617,000; in 1919, \$32,187,000; and in 1914, \$25,444,000. These figures indicate a decrease of 11.1 per cent from 1919 to 1921, and an increase of 12.5 per cent from 1914 to 1921. Of the 110 establishments that reported products valued at \$5,000 and more in 1921, 52 are in New York; 13 in Massachusetts; 9 in Missouri; 8 in Pennsylvania; 7 in Maryland. The rest were more or less scattered among 10 other States. The average number of wage earners in the 110 establishments, in 1921, was 5,924; in 1919 (143 establishments) the average number was 7,302; and in 1914 (132 establishments) the average number was 9,483. The wages paid in 1921, totaled \$6,415,000; in 1919, \$6,605,000; and in 1914, \$5,253,000. The aggregate of materials used amounted in value to \$14,559,000, in 1921; \$16,910,000 in 1919; and \$14,086,000 in 1914.

STREAM POLLUTION. See PUBLIC HEALTH SERVICE, UNITED STATES.

STREET RAILWAYS. See subsection Electric Railways under RAILWAYS.

STRIKES AND LOCK-OUTS. Outstanding developments in the American labor world in 1922 were the successful fight of the coal miners to retain the 1920 wage scales, the unsuccessful struggle of the railroad shopmen and the partially victorious efforts of New England cotton mill hands against lower wages and longer hours. Of these great strikes, the most stubbornly contested was that of the coal miners who on 1 April quit work in both the anthracite and bituminous fields. This general strike was a contest to maintain old wage scales. The operators in the soft coal fields desired a return to the scale fixed in 1917 to which 26 per cent was added in the 1920 scale fixed by President Wilson's bituminous commission. In the hard coal fields, the operators matched a demand for a 20 per cent increase on the part of the union with a demand for a 22 per cent reduction. Both groups of operators emphasized competition as the reason for demanding reductions, while the United Mine Workers of America, through their chief spokesmen, President John L. Lewis and Vice-President Philip Murray, urged the cost of living, the hazards of industry and that, as large as the increases of 1920 might be over pre-war wage, the existing rates were justified because the pre-war figures had been unreasonably low.

When the coal strike began 550,000 union miners quit work, followed shortly by 90,000 men in the non-union fields of Pennsylvania and West Virginia. The ability of the union to disable the Connellsville coke field, for a generation non-union, and to take thousands of miners out of other equally strong non-union districts in Central Pennsylvania proved to be, it is believed, the determining factor in enabling the union to emerge victorious. At the time of the strike, 120,000,000 tons of coal were available. Late in

summer, however, when it was discovered that non-union production of coal was 63,000,000 tons less than the national consumption, the Administration intervened by calling conferences in Washington at which President Harding proposed an immediate resumption of mining and the submission of all disputed points to arbitration. This was declined by the United Mine Workers. A meeting of Central Competitive Field operators and union leaders held in Cleveland 7 August also failed when operators refused to renew the old scale. A second conference, embracing operators and miners from all fields, agreed on 15 August to renew the old scales to run to 31 March 1923 and to set up machinery for the making of a new agreement to be signed before that date. Securing this victory against a reduction in wages, President Lewis waived the demand for a six hour day and five day week.

Following the bituminous settlement, the union chiefs and anthracite operators, headed by Samuel D. Warriner, resumed peace parleys in Philadelphia, first meeting 17 August. After a fortnight's negotiations during which operators insisted upon arbitration of future disputes as a condition of renewing old scales, it was agreed on 4 September, to extend the old scale to 23 Aug. 1923 without conditions. In these negotiations Senator George Wharton Pepper and Secretary of Labor James I. Davis actively participated. A fact-finding commission, authorized by Congress and named by President Harding, was organized with John Hays Hammond, the noted metallurgical engineer, as chairman to investigate all phases of the coal industry, including the advisability of nationalizing the mines. Its findings, however, are not to be binding on either side to the controversy.

While no figures could be obtained as to the cost of the strike in the soft coal field, the estimated cost of the strike in the anthracite regions was \$250,000,000 of which \$125,738,400 represented loss in wages. The loss to the public in tons of anthracite approximated 35,000,000 or about 45 per cent of the annual supply. As this could not be made up for months, the Atlantic seaboard consumers, chief users of hard coal, were forced to rely upon a 50 per cent supply of anthracite, the balance being made up in bituminous and other substitutes.

The Railway Shopmen's Strike.—Begun three months after the coal miners quit work, the railway shopmen's strike was a factor in forcing a settlement of the coal strike, through impeding the flow of non-union coal from the South. Threatening since the spring of 1920, when the roads were released from Government control, the causes of the strike were officially stated as the reduction of wages averaging 12 per cent, effective 1 July 1922; changes in working conditions previously ordered by the United States Railroad Labor Board, and the practice of some roads (condemned by the Board) of leasing shop and other work to private contractors to place it beyond the jurisdiction of the Board, and thereby permit lower labor costs. Of these grievances, the "contracting out" and changes in rules were regarded as the most serious. Actually, the strike was the outcome of the old struggle of the unions to retain as much as possible of what they had gained during Govern-

ment control, and of the executives to restore, as nearly as possible, pre-war conditions.

The roads had attained, in this struggle, two general reductions in wages and also changes in the rules in the national agreements which lessened the earnings of the railway shopmen. The Railroad Labor Board also approved abrogation of national agreements conditional on agreements between executives and unions, but this was not made effective because the unions insisted upon writing the national agreements into all system contracts. Following these decisions by the Board and the refusal of the Pennsylvania Railroad Company to obey one of its rulings a strike vote was taken. Union leaders argued that the Board was unwilling or unable to protect their unions, citing the contracting out practice and the Pennsylvania case as proofs. Union leaders, a day before the strike, disregarded subpoenas from the Board ordering them to appear before it and show cause why they should not be ordered to refrain from interrupting traffic. The Board, following a demand upon the roads by the unions for the restoration of the second wage cut which was refused, declared the strike on 11 July to be not against the roads but against its orders and that men who took strikers' places were not to be considered strikebreakers.

The programme of the strike leaders failed in that the Brotherhood of Maintenance of Way Men declined to authorize a strike of the 400,000 men under its jurisdiction, as did the International Brotherhood of Signalmen with 16,000 men. The Brotherhood of Clerks and Freight Handlers struck only in spots. Nevertheless, the shops of practically every road in the country were crippled and the movement of trains was made difficult, but with reserve rolling stock, and the drafting of men from supervisory and other forces, the roads maintained fairly close schedules while rebuilding their forces. Only in the West and South was any considerable number of trains cancelled.

After a proposal from President Harding and an offer to make peace from the "Big Four" railroad brotherhoods not involved in the strike had failed, an agreement known as the Willard-Jewell plan was reached 25 September, between the unions and roads that had been unable to rebuild their forces to their entire satisfaction. This agreement provided that the men should return to work in positions of the class they originally held at the existing rates of pay, the unions abandoning the claim to seniority save "as between themselves" and the earlier position that any settlement would have to be on a national basis. All suits at law which were pending as a result of the strike were cancelled by both parties. The process of settlement with individual roads was still under way at the close of the year and echoes of the strike were still being heard throughout the country, though so far as any visible effect on transportation was concerned, the strike, ceased in late summer.

The cost of the strike to the railroads is estimated at \$150,000,000. The cost of the strike in wages is estimated by the Labor Board at \$177,535,524. Against this loss, union leaders balance the claim that by striking they checked further reductions in wages. Though militia

were employed at several strike centres, the strike was remarkably free from violence.

Despite this circumstance, Attorney-General Harry M. Daugherty applied to the United States District Court in Chicago on 1 September, when the struggle was practically over, for a blanket injunction restraining the strike leaders, their associates and members from further interfering with transportation and forbidding, among other things, picketing. In many respects it was the most sweeping order ever asked for in a labor dispute. Judge Wilkerson issued the order over the bitter protests of the unions; it remained in force pending review by higher courts.

Both sides claimed gains from the Willard-Jewell settlement at Baltimore. Those carriers which did not sign the agreement claim complete victory; those that did claim victory because the shopmen went back to work at the wages and under the working conditions fixed by the Board against which they had struck, and because the strikers apparently retreated from their position that they would make no settlement except on a national basis and gave up the position that they must be taken back with their seniority rights unimpaired. The shopmen replied that those roads which failed to sign the pact will be forced to do so through inability to maintain equipment and that on roads which have signed, contracting out has been discontinued and disputes on rules and wages are to be taken up for adjustment locally or regionally. One of the most far-reaching results of the strike was the obvious dissatisfaction, particularly on the part of railway labor, with the labor provisions of the Transportation Act; the unions have announced their intention of returning to the pre-war methods of direct negotiations with the railway managements and of withdrawing from the Labor Board cases now before it.

The Textile Strike.—The cotton textile strike which broke 23 Jan. 1922 in the Pawtuxet Valley, R. I., and spread to Massachusetts and New Hampshire in a very short time, was the worst strike Rhode Island ever experienced in its industrial history. The cost to that State alone is fixed in excess of \$23,000,000, plus invisible costs of several million more in lost production and lost business. Fifty thousand textile workers of a half-dozen nationalities were involved in this New England industrial struggle.

Early in January it was reported to the Rhode Island mill men that the workers would accept a 20 per cent cut in wages and an increase in hours from 48 to 54 per week. Eight thousand members of the Amalgamated Textile Workers' Union walked out in the Pawtuxet Valley immediately upon the posting of the notices of wage reductions. They were followed two weeks later by 6,000 members of the United Textile Workers in the Blackstone Valley. It was an open secret that the managements, owing to the condition of the market, were willing to close the mills for as long as four weeks with the feeling that at the end of that time the strikers would be ready to return to work. But the strike spread to the mills in Lowell and Fitchburg, Mass., and Manchester, Nashua and Dover, N. H. The last of the strikers to come out were 11,000 workers in Lawrence, Mass.,

where leaders of the One Big Union, a radical industrial organization, acted as virtual spokesmen for the strikers, though the United Textile Workers' Union, an American Federation of Labor organization, was numerically in control.

After eight months of struggle, during which there were a number of clashes between strikers and State police, the strike in Rhode Island came to an end. The wage cut was rescinded, but in the Blackstone Valley the 48-hour week was lost, the workers going back to a 54-hour week. A settlement was then reached in the Massachusetts textile centres on the same wage basis; the 48-hour week fixed by the Massachusetts State Legislature prevented any controversy over the question of hours. The last mills to settle were the Amoskeag Mills at Manchester, employing 25,000 men. Here the 54-hour week is in force.

For the year 1922, approximately 3,000 strikes are recorded, involving 3,000,000 persons. This is an increase of 832 strikes over the previous year, affecting 1,000,000 more workers. During the six years ending 1922, there were 2,700 strikes in the building trades; 2,600 in the metal trades; 2,000 in the clothing industry; 1,400 in mining; 1,250 in the textile industry and 1,200 in steam and electric transportation.

Violence marked a number of industrial conflicts during the year, but no episode evoked as much national feeling as did the murders at Herrin, Ill., 22 June. As a result of the death of 24 non-union miners and mine guards and the wounding of many others, a special grand jury returned 214 indictments against 74 men: for murder, 44; for conspiracy to murder, 58; for rioting, 58, and for assault with intent to murder, 54. The trial began on 13 November. It took one month and the examination of 220 talesmen to obtain a jury. The opening speeches were made 13 December and the trial was in progress when the new year was ushered in. The miners' union raised a fund for the defense. Of the 74 men under indictment, 55 were at once arrested and admitted to bail, furnished in a blanket bail bond by prominent citizens of the locality in the State where the deaths occurred. The first of these trials resulted in acquittal. On 6 April 1923 six more of the union miners who were charged with murder were acquitted and on 7 April all of the untried indictments growing out of the Herrin mine massacre were *nolle prosequi*.

STUDENT FRIENDSHIP FUND. This fund is the American section of the European Student Relief. The latter organization grew out of the need of Austrian students after the war. Relief was first given in 1920 to students in Vienna and operations there were continued and enlarged in co-operation with the Society of Friends. During the summer of 1920 students in Poland, Germany and Czechoslovakia were being helped by the Friends and the Young Men's Christian Association. In August of that year a conference was held in Beatenberg and a decision was made that the World Student Christian Federation should inaugurate a student relief program for the needy students of the Baltic States, Poland, Germany, Czechoslovakia, Austria, Hungary, Asia Minor, and the foreign students in Switzerland and France; and that all the Student Christian Movements affiliated with

the Federation should co-operate by contributing funds, supplies and workers. Campaigns in most of the countries were immediately undertaken and the response of the students of the more fortunate lands to the appeal for their struggling brothers was immediate.

In the United States the campaign to raise funds began in the fall of 1920 under the name of Student Friendship Fund which was fostered and organized by the Young Women's Christian Association, Young Men's Christian Association and Student Volunteer Movement. It was felt that these contributions should represent real friendships and the appeal was based on this spirit. The call for help from the students abroad reached all the students of colleges and universities in the United States whether they actually belonged to a Christian organization or not, although in most cases it has been the members of the Christian Associations who have been the first to see the value of saving the students of these European countries.

The Student Friendship Fund's third campaign for funds was under way in January 1923. The funds from the first campaign, about \$300,000 went through the American Relief Administration and were administered by it for students in the Baltic States, Austria, Czechoslovakia, Hungary and Poland. The second drive brought in from 767 schools, colleges and a few outside sources \$360,000. No figures relative to the third campaign were available 20 Jan. 1923.

There were 41 countries which were associated with the Student Friendship Fund in contributing in 1922 to the support of the European Student Relief program and 12 countries which received aid. The organization has been endorsed by Secretary Hoover, of the Department of Commerce, Frank A. Vanderlip, Col. W. H. Haskell, Lord Robert Cecil, and the National Information Bureau. John R. Mott, is chairman, Helen Ogden, executive secretary. National headquarters is at 347 Madison Avenue, New York City.

STURZO, Luigi, Italian clergyman and political leader: b. Caltagirone, Sicily, 1871. After a preliminary education in the seminaries of his native Sicily, he entered the Gregorian University at Rome, from which he was graduated with the degree of D.D. in 1898. While still a student he engaged in politico-social work, serving on diocesan committees, parochial clubs, savings and loan associations, co-operative societies, all of which later became the framework of the Christian Democratic Party, the purpose and aim of which were the same as the Popular Party which succeeded it. For many years Don Luigi, as he is called in Sicily, served as mayor of Caltagirone doubling its bank balance, building community houses for workmen, and constructing an electric light and power plant. He founded a technical and zoological institute, a school of ceramics, and doubled the number of primary schools. During the same period he taught philosophy, literature and canon law in the local seminary, studied administrative law and was made vice-president of the Association of Italian Communes. In 1905 he withdrew from the political arena for a time but under the sur-

face he was planning a union of the Christian forces whose purpose should be "to reanimate and perpetuate the magisterial thought and accomplishment of the days when the fortunes of the Church were in full flood, and to band together all those who have in common the Latin and Christian mind of Rome, and who share the sense of exaltation of having lived with the same profundity of faith, with the same ideal, seeking the same goal."

On 13 Jan. 1919, he sent out his famous appeal which resulted in the formation of the Popular Party. It made a triumphant entry into Parliament in the first election held after the war. Don Luigi became the director of this party. He nurtured it and directed it with the imperiousness of an experienced master. For a time it had over 100 members in Parliament. Don Luigi's aim may be gathered from his reply to the question asked by an American journalist of what he would do for Italy if he were all-powerful: "Make her again the cultural light of the world; decentralize governmental administration; eviscerate bureaucracy; give the people education and teach them to understand organic liberty." In Mussolini's first cabinet the Popular Party had four members. In April 1923, Don Luigi and his party drew aloof from the Fascisti and Mussolini asked for the resignation of the four cabinet officers of the party.

STYRIA, a division of the Republic of Austria, formerly a Crownland of the Austrian-Hungarian Monarchy. Its area is 6,327 square miles with a population of 953,684. Pre-war Styria had an area of 8,665 square miles. See AUSTRIA.

SUBMARINES. See UNITED STATES NAVY; WASHINGTON CONFERENCE.

SUDAN, Anglo-Egyptian, an African territory extending southward from the frontiers of Egypt and the Belgian Congo for 1,650 miles and from the Red Sea inland to Wadai in Central Africa. The Territory is under British authority. It has an area of 1,014,400 square miles. The population is estimated at 3,400,000. Khartum, the capital, has a population of 23,083. Omdurman, the old Dervish capital has 50,429. According to the budget estimates for 1921 the revenues and expenditures balanced at £E4,026,000. The Egyptian pound (par value, \$4.9431) equals 100 Egyptian piasters. The Sudan is the principal source of the world's supply of gum arabic and ivory. An increasing acreage is being planted to Egyptian cotton and the quality of the yield is equal to that of Egypt. Other products are sesame, ground nuts, dates, hides and skins, senna leaves and dura, a variety of millet. Cattle raising is increasing under the fostering care of the Government. The region is rich in forests which include ebony, gum acacia, bamboo, and the rubber creeper. Gold is also found but only a single mine is being exploited. In 1922, imports were valued at £E4,252,890 and exports at £E1,993,436. Exports of gum hashab in 1922 totaled 13,012 tons valued at £E490,173 and exports of ivory, 57 tons valued at £E63,308. The Sudan has a total length of railways of about 1,500 miles, of which the chief line is that from Wadi Halfa to Khartum, which was originally

built for military purposes. A branch was subsequently constructed to the Red Sea port of Port Sudan. The gauge is 3 feet 6 inches. There are over 2,500 miles of waterways on the Nile and its tributaries between Assuan and Rejaf, on which Government steamers maintain regular schedules. There are 4,650 miles of telegraph line and 81 post and telegraph offices and 11 traveling post offices.

The Sudan is administered under the terms of a convention between Egypt and Great Britain. The Governor-General is appointed by Egypt with the assent of Great Britain. The flags of both countries are used jointly and laws are made by proclamation. There are 15 Provinces, the governors of which are British officers of the Egyptian army or British civil officials of the Government. Under present policy an increasing number of natives are being employed in administrative posts. The Governor-General is assisted by a Council in his executive and legislative functions.

The Governor-General and Sirdar in 1922 was Major-General Sir L. O. F. Stack; Legal Secretary, Wasey Sterry and Financial Secretary, Sir E. E. Bernard.

SUGAR. Production.—Estimates of the sugar crop of the world by Willett & Gray of New York City indicate production for the 1922-23 season amounting to 18,046,396 tons, compared with 17,650,662 tons in the season of 1921-22, an increase of 395,734 tons. The Cuban crop is estimated at 4,000,000 tons, or slightly over the 3,996,387 tons produced in 1921-22. Pre-war world production was about 18,697,331 tons and pre-war Cuban production, 2,597,732 tons.

The beet-sugar crop of the United States is placed at 625,000 tons, compared with 911,190 tons for the season of 1921-22; and the European beet-sugar crop at 4,710,500 tons, compared with 4,066,042 tons in 1921-22. European pre-war beet-sugar production was in excess of 8,000,000 tons.

At the beginning of 1923, Cuba, it was said, had on hand, only 8,500 tons of old-crop sugar in contrast with the 1,200,000-ton carryover that was causing grave anxiety a year before. This meant says an analysis by the Foodstuffs Division of the Department of Commerce, that with its record crop of 4,000,000 tons, Cuba disposed of 5,200,000 tons of sugar in 1922. The distribution was effected through the exportation of over 4,000,000 tons to the United States, some 850,000 tons of which (in terms of raw sugar) went to Europe after refining, and the shipment of another 850,000 tons to Europe direct. Thus Europe was supplied with 1,700,000 tons toward her deficit of 2,300,000 tons, most of the remainder coming from Java. The 3,000,000 tons of Cuban sugar that remained in the United States, combined with the production of the United States and its possessions, was just about sufficient to supply the record United States consumption of nearly 5,500,000 tons (raw sugar).

The following table from the *Weekly Statistical Sugar Trade Journal* (Willett & Gray) gives the latest estimates of the sugar crops of the world:

Countries	1922-23 Tons.	1921-22 Tons.
United States:		
Louisiana.....	215,000	289,669
Texas.....	2,875	2,920
Porto Rico.....	350,000	362,442
Hawaiian Islands.....	476,000	490,000
Virgin Islands, W. I.....	6,000	5,000
Cuba.....	4,000,000	3,996,387
British West Indies:		
Trinidad.....	55,000	59,948
Barbados.....	35,000	36,000
Jamaica.....	38,000	42,167
Antigua.....	12,000	9,850
St. Kitts.....	15,000	8,426
Other British West Indies.....	10,000	9,238
French West Indies:		
Martinique.....	19,700	18,329
Guadeloupe.....	30,000	32,000
San Domingo.....	200,000	225,000
Hayti.....	12,000	12,283
Mexico.....	120,000	119,800
Central America:		
Guatemala.....	20,000	19,090
Other Central America.....	28,000	27,972
South America:		
Demerara.....	100,000	107,797
Surinam.....	11,000	10,000
Venezuela.....	16,000	16,000
Ecuador.....	8,000	7,000
Peru.....	340,000	325,000
Argentina.....	200,000	175,000
Brazil.....	425,000	491,933
Total in America.....	6,744,575	6,899,251
British India.....	2,575,000	2,500,000
Java (1923-24, 1,720,000).....	1,750,000	1,649,610
Formosa and Japan.....	405,800	406,966
Philippine Islands.....	285,000	338,160
Total in Asia.....	5,015,800	4,894,736
Australia.....	300,000	298,701
Fiji Islands.....	52,000	65,000
Total in Australia and Polynesia.....	352,000	363,701
Egypt.....	90,000	100,000
Mauritius.....	225,000	182,234
Reunion.....	40,000	38,593
Natal (1923-24, 200,000).....	157,521	146,983
Mozambique.....	45,000	35,000
Total in Africa.....	557,521	502,810
Europe-Spain.....	6,000	5,000
Total cane sugar crops.....	12,675,896	12,665,498
Europe—Beet:		
Germany.....	1,600,000	1,305,810
Czecho-Slovakia.....	750,000	659,907
Austria.....	19,500	16,322
Hungary.....	75,000	74,898
France.....	560,000	278,273
Belgium.....	295,000	289,866
Holland.....	285,000	376,000
Russia and Ukraine.....	220,000	49,374
Poland.....	270,000	225,000
Sweden.....	63,000	227,000
Denmark.....	105,000	146,800
Italy.....	260,000	217,532
Spain.....	170,000	135,000
Switzerland.....	8,000	5,500
Bulgaria.....	25,000	22,000
Roumania.....	25,000	25,761
Total in Europe.....	4,730,500	4,055,043
United States—Beet.....	625,000	911,190
Canada—Beet.....	15,000	18,931
Total beet sugar crops.....	5,370,500	4,985,164
Grand total—cane and beet sugar.....	18,046,396	17,650,662
Estimated increase in the world's production.....	395,734	883,351

Cuba's ability in 1922 to distribute both a record crop and a record carryover was thus due in the main to a record consumption in the United States and to a European crop that

fell far short of the consumption needs of that Continent. The year 1923 started with another 4,000,000-ton Cuban crop in sight, a big crop in Java, and a greatly increased production in Europe. But various decreases elsewhere, notably in the United States, brought the world production only 125,000 tons higher than it was in 1922, to supply consumption needs estimated at 350,000 tons more than in 1922.

The following table shows the situation in sugar. Figures are in long tons and in terms of raw sugar:

COMPARATIVE WORLD SUPPLIES AND CONSUMPTION. (Dept. of Commerce Estimates.)

PERIODS	Estimated production Tons	Estimated consumption Tons	Final carry over, end of year Tons
Pre-war.....	17,500,000	17,500,000	750,000
1920-21.....	16,682,000	16,198,000	1,700,000
1921-22.....	18,183,000	18,680,000	1,203,000
1922-23.....	18,308,000	19,035,000	476,000

Consumption figures for 1923 are necessarily rough estimates and the figures given are made somewhat conservative to allow for increases over last year in visible and invisible stocks and for unfavorable economic conditions in some countries. Thus the increase in world consumption in 1922 over 1921 was more than 16 per cent; the estimated increase in 1923 over 1922 is only 2 per cent.

The following table shows the pre-war and 1922 sugar consumption of the principal countries of the world, with estimates for 1923. Figures are in long tons of raw sugar.

PRE-WAR, 1922, AND 1923 CONSUMPTION OF IMPORTANT SUGAR-CONSUMING COUNTRIES, IN LONG TONS OF RAW SUGAR.

COUNTRIES	Pre-war average, 1912-1914 Tons	1922 Tons	1923 estimates Tons
United States.....	3,800,000	5,461,000	5,500,000
Canada.....	290,000	388,000	400,000
Mexico.....	125,000	110,000	120,000
Argentina.....	210,000	225,000	225,000
Brazil.....	320,000	360,000	380,000
Austria.....	700,000	110,000	120,000
Hungary.....		72,000	75,000
Czechoslovakia.....		309,000	300,000
Belgium.....	200,000	158,000	170,000
Denmark.....	106,000	150,000	155,000
France.....	705,000	806,000	850,000
Germany.....	1,500,000	1,460,000	1,400,000
Italy.....	175,000	300,000	315,000
Netherlands.....	125,000	235,000	220,000
Norway.....	50,000	85,000	85,000
Poland.....	100,000	150,000	180,000
Spain.....	127,000	176,000	180,000
Sweden.....	152,000	180,000	80,000
Switzerland.....	120,000	130,000	130,000
United Kingdom....	1,900,000	1,725,000	1,750,000
Australia.....	250,000	280,000	300,000
British India.....	3,270,000	3,000,000	3,000,000
China.....	447,000	800,000	800,000
Japan.....	325,000	550,000	600,000
All other countries..	2,505,000	1,460,000	1,600,000
Total.....	17,500,000	18,680,000	19,035,000

European consumption of sugar in the pre-war years averaged about the same as its production. Both declined and after the war period both have greatly increased from 1920-21 to the present time. But while the consumption did not decline so sharply as the production, it recovered to an even greater extent in 1921 and

1922 and reached the pre-war total (exclusive of Russia).

From the data now available it looks as if 1923 would see a decrease in Europe's import needs amounting to 350,000 to 400,000 tons; but the United States supplies will have to be supplemented by about the same amount in order to make up for the decrease in the domestic beet and cane crops.

The consumption figure for the United States in 1922 broke all previous records of the kind. It showed the tremendous increase over the year 1921 of 985,430 tons, which is a per capita consumption of 103.18 lbs., as compared with 84.47 lbs. per capita in 1921. Sugar market quotations increased from 3.540 and 4.704 for 96' centrifugals and granulated respectively on 11 Jan. 1922 to 5.400c and 6.762c on 11 Jan. 1923. On 17 March 1923 these quotations had risen to 7.41 for the centrifugals and 9.30 for fine granulated.

Early in 1923, speculators misinterpreted a statement of the Department of Commerce relative to the sugar situation, and the market became panicky with the result that prices of sugar went soaring, refined being quoted at 10¼ cents wholesale (11¼ in Canada), on 24 April 1923. Secretary Hoover, on 23 March, had announced that his Department had been investigating the sugar situation and found no justification for the current high prices. On 25 March, he wrote Representative Dallinger that there was no sugar shortage, but there would be a surplus of 476,000 tons at the close of 1923. The Government applied for an injunction against the New York Coffee and Sugar Exchange and others to prohibit dealing in futures. The application was denied by the lower court and notice of appeal was given.

SUGAR CANE INSECTS. See ENTOMOLOGY, UNITED STATES BUREAU OF.

SUGAR CANE MOSAIC. See PLANT INDUSTRY, BUREAU OF.

SUICIDES. According to a report issued by Dr. Harry M. Warren, president of the Save-a-Life League, 12,000 persons committed suicide in the United States in 1922. Seventy-nine were millionaires. One-third of the total were women. The oldest was a great-great-grandmother, aged 100 years; the youngest a child of five. In New York City 839 persons killed themselves. Some parts of the country reported waves of suicides and one girls' suicide club was discovered. Among those who committed suicide were 38 college students, 50 college professors and school teachers, 19 preachers and religious workers, 52 judges and lawyers, 84 physicians, 100 presidents and heads of large business concerns, and a number of bank presidents. In many cases the causes assigned were trivial. One girl killed herself after having her hair bobbed; a man because he was forced to quit playing golf; a woman because she missed two trains; a young man "for the fun of it"; a girl "just to get a thrill." Doctor Warren stated that the suicide of children is a serious problem. In 1919 child suicides reported numbered 477; in 1920, 707; in 1921, 858; in 1922 over 900, or nearly 3,000 in four years. The average age of boy suicides, according to Doctor Warren, is 16; girls, 15. Most of the girls use poison; the boys, guns.

SULGRAVE INSTITUTION, The. An organization formed in England in 1913 to unite the English-speaking peoples of the world. It takes its name from Sulgrave Manor, the home of George Washington's ancestors in Northamptonshire, England, which Manor, including the house, outbuildings and ten acres of land was purchased in 1913 by a body of English people who turned the estate over to a board of trustees "to be forever maintained as a place of pilgrimage for all who venerate that Colonial Englishman who became the Father of the American Republic." The Manor House was formally dedicated on 21 June 1921, the principal address being made by the Marquis of Cambridge, brother of Queen Mary, in the presence of a distinguished gathering of English and Americans.

On this occasion a letter was read from Mrs. Victoria Woodhull Martin, a pioneer in advocating friendship between America and Great Britain announcing her intention to deed to the Sulgrave Institution the Bredon's Norton Manor House and adjacent property as a centre of work for the Sulgrave movement. Mrs. Martin and Miss Woodhull, her daughter, also announced that it is their intention to cause the whole of the Bredon's Norton property to fall to the Sulgrave Institution. This property consists of more than two square miles of beautifully situated land in Worcestershire, 35 miles distant from both Sulgrave Manor and Stratford-on-Avon. Shakespeare's river meanders through the property and on the crest of Bredon's Hill, Boadicea, the British Queen, built a camp from which she withstood for several years the onslaughts of the Romans. The remains of this camp, as well as the Roman camp which succeeded it, are still to be seen. There are three Manor Houses on the property, their respective dates being the Thirteenth Century, the Fifteenth Century and the Eighteenth Century. In the two Manor Houses transferred to Sulgrave there are accommodations for about 40 persons, exclusive of the serving-staff. The interior of a tithe-barn adjoining the Manor has been transformed by Mrs. Martin into an auditorium accommodating 250 persons. It is the intention of the Sulgrave Institution to use Bredon's as a working-centre of the Society and as a place for conferences.

Branches were immediately organized for the definite work of furthering friendship between the English-speaking peoples. The work of restoring Sulgrave Manor was also undertaken. The house has already become a museum for valuable relics and documents associated with the Washington family. Furniture and other gifts have been received from both England and America.

The American branch of the Institution is incorporated under the laws of the State of New York.

The purposes of the Institution are: (1) "To foster friendship among English-speaking peoples; (2) To inform our mutual peoples in the arts and practices of peaceful intercourse for the benefit of our respective nations and as a help and an example to all mankind; (3) To bring together into a closer community of

interest those societies, associations, and general organizations, together with all individuals, that are engaged in any work which tends towards the understanding of the Anglo-Saxon-Celtic point of view, culture, laws and related institutions; and (4) to aid in upholding and maintaining the fundamental institutions of the English-speaking world and in fostering the ideals which inspired that creation." The work already achieved includes the rehabilitation and furnishing of Sulgrave Manor; the foundation of a lectureship on American History and Institutions under endowment of \$100,000 given by Sir George Watson (this lectureship was inaugurated by the late Viscount Bryce at the Mansion House, London on 30 June 1921, and was given in 1922 by Dr. Arthur T. Hadley of Yale University); holding of annual service commemorative of Washington's birthday in St. Paul's Chapel, New York, where Washington attended during his residence in New York; and the establishment of scholarships at the State School of Agriculture, Morrisville, New York, through gift from the Lafayette Fund, John Moffat, chairman.

Among the gifts sent to England from America were: replica of St. Gauden's statue of Abraham Lincoln, by Nicholas Murray Butler, Elihu Root, Henry White and others, unveiled opposite Westminster Abbey, London, July 1920; gift of Mr. and Mrs. Charles Phelps Taft of a replica of Barnard's statue of Lincoln to the city of Manchester; gifts of busts of George Washington to St. Paul's Cathedral and the Town Hall, Liverpool; and Lincoln Gettysburg Memorial Tablets to Hingham and Birmingham, from the Hingham Memorial Association.

England's gifts to America were a painting of Sulgrave Manor, by Stephen Reid, to the President and Mrs. Harding; A. Forestier's famous painting "The Signing of the Treaty of Ghent"; Reid Dick's bust of William Pitt, to the people of Pittsburg (Sir Charles Wakefield's donation); statue of Edmund Burke to the city of Washington; and bust of James Bryce to Trinity Church, New York. The last three memorials were brought to the United States and unveiled by a delegation from the Sulgrave Institution headed by Sir Charles Wakefield in September-October, 1922. The delegation visited Mont Vernon and placed on the tomb of Washington a wreath of ivy-leaves and flowers from the grounds of Sulgrave Manor.

A moving picture (entitled "The Cradle of the Washingtons") produced under the auspices of the Sulgrave Institution, had its first public presentation in November 1922, at the Museum of Natural History, New York, (with a lecture by Arthur Branscombe) and is in the hands of the National Non-Theatrical Motion Pictures.

In the coming year a bust of the late Joseph H. Choate by J. Massey Rhind of New York, a good-will offering from the Sulgrave Institution of the United States, to the Benchers of the Middle Temple, London, will be unveiled in the Middle Temple, London, of which great legal body Mr. Choate was a distinguished member.

ESTHER SINGLETON.

SULPHUR, Production of. See CHEMICAL MANUFACTURING.

SULPHURIC ACID, Manufacture of. See **CHEMICAL MANUFACTURING.**

SUMATRA. See **DUTCH EAST INDIES.**

SUNDAY-SCHOOL UNION, American.

An organization formed in 1824, for the purpose of establishing and equipping "a Sunday school in every community where there are no churches or religious services, and for publishing and circulating moral and religious literature of a Scriptural character and upon a Scriptural basis." It also promotes co-operation among Christians and Evangelistic workers in rural communities. It is an outgrowth of the First-Day Society, founded in 1791, which led to the establishment of the Philadelphia Sunday and Adult School Union in 1817, the latter organization with similar societies of other States being merged into the present National body in 1824. During the year which ended 28 Feb. 1922, the American Sunday-School Union commissioned 229 missionaries, organized 1,443 new Sunday-schools and reorganized 568. These schools have 6,696 teachers and 63,894 scholars. In addition to their pioneer work, the missionaries visited 11,603 schools consisting of 51,314 teachers and 618,881 scholars. Sermons and addresses delivered numbered 22,056. Bibles delivered numbered 6,335, while 8,706 copies of the New Testament and 9,024 copies of the Gospel of John also were distributed. The total number of books, booklets, maps, charts and other Sunday-school requisites issued was 156,435. The combined circulation of 11 different Sunday-school periodicals was 1,938,420. During the past year, 49 churches of various denominations grew out of the Union Sunday schools. Two hundred and seventy-five young people's societies, and 341 prayer meetings were established, while 335 regular preaching stations were opened. Conversions reported numbered 7,270. The organization has its headquarters at 1816 Chestnut St., Philadelphia, Pa.

SUNFLOWER SEED. A production in 1922 of approximately 8,000,000 pounds of sunflower seed (used extensively as a poultry food) was estimated by the Department of Agriculture for the three large producing sections of Missouri, Illinois and California. This is about twice the production of 1921. The increase was due primarily to increased acreage and a larger yield per acre in Southeast Missouri which produced approximately 6,000,000 pounds against 3,000,000 pounds the previous year. California produced about 700,000 pounds and Illinois around 1,000,000 pounds. Prices ranged from \$3 to \$6 per hundred pounds. Importations of sunflower seed at New York during 1922 totaled 3,700,000 pounds between 1 January and 21 October. Most of the imported stock came from Argentina.

SURGERY. See **MEDICINE AND SURGERY, ADVANCEMENT OF.**

SURINAM. See **DUTCH GUIANA.**

SUSQUEHANNA UNIVERSITY, a Lutheran co-educational institution, founded in 1858 and located at Selinsgrove, Pa. In 1922-23 it had a faculty of 29 members, 340 students, property valued at \$350,000 and an income of \$80,000. Charles T. Aikens, D.D., is president.

SUTHERLAND, George, American jurist: b. Buckinghamshire, England, 25 March 1862. While he was still in his infancy his parents brought him to the United States and settled in Utah. There he received his rudimentary education in common schools and academies. He studied law at the University of Michigan. 1882-83, and in the latter year was admitted to practice in the Michigan Supreme Court. From that time on, he practiced law continuously; from 1893 to 1922 he practiced in Salt Lake City, Utah. He received the degree of LL.D., from Columbia University in 1913, from the University of Michigan in 1917, and from George Washington University in 1921. He was State senator from the sixth senatorial district in the first Utah Senate (1896); delegate to the Republican national conventions of 1900, 1904, 1908, 1912 and 1916; member of the 57th Congress (1901-03); declined renomination to the 58th Congress; was United States Senator from Utah for two terms (1905-17). Because of the rare reputation he had acquired as an authority on constitutional law, in 1918 he was invited by Columbia University to lecture on the Constitution, in a series of eight lectures, which were later published under the title 'Constitutional Power and World Affairs.' This book is generally considered by lawyers one of the great works on the Constitution. In 1916-17 he was president of the American Bar Association. On 5 Sept. 1922 he was nominated by President Harding as Associate Justice of the Supreme Court of the United States, to fill the vacancy caused by the resignation of former Associate Justice John H. Clarke, of Ohio. His appointment was at once confirmed by the United States Senate, and he was inducted into office 2 Oct. 1922. In the Senate he was considered one of the great orators, primarily because of the power and clarity of his arguments. He has won an enviable reputation as an advocate of the fundamental integrity of the Constitution, and as an opponent of "every attempt, however insidious or indirect, to destroy personal liberty in the name of order, or order in the name of liberty," and as an ardent exponent of comparatively few but intelligently framed laws, together with strict adherence to them by the people, and rigid enforcement of them by the judiciary.

SWARTHMORE COLLEGE, a non-sectarian co-educational institution, founded in 1864 and located at Swarthmore, Pa. In 1922-23 it had a faculty of 53 members, 516 students, and property valued at \$2,070,945.91 including land, buildings and equipment. Its income for 1921-22 was \$318,849.24. Frank Aydelotte, A.M., is president.

SWAZILAND, a British Protectorate in South Africa, located to the southeast of the Transvaal and north of Zululand. Its area is 6,678 square miles and in 1921 the population included 111,106 natives of Zulu type, seven Asiatics, 456 colored persons, and 2,200 Europeans, a total of 133,563. The seat of the government is at Mbabane. Agricultural products of the region include tobacco, Indian corn, beans, ground nuts, pumpkins, millet, and sweet potatoes. Cotton growing is being introduced and stock raising is thriving. Sheep are

brought from the Transvaal every year for winter grazing. There are 230,000 head of cattle. The region is reported rich in minerals but development has proceeded only with tin. There are four gold mines. Revenue for 1921 amounted to £88,372 and expenditure to £111,139. There are no separate returns for the external trade of Swaziland. The export trade consists mostly of tin. The Resident Commissioner in 1922 was D. Honey.

SWEDEN, a kingdom of northwestern Europe, occupying with Norway the Peninsula of Scandinavia. It has an area of 173,035 square miles and a population of 5,903,762 on 31 Dec. 1920. The population is entirely Swedish, with the exception of 25,290 Finns and 7,138 Lapps and about 20,000 other foreigners of more or less temporary residence. The movement of the population was as follows in 1920: births, 138,505; marriages, 42,829; deaths, 78,112, leaving a surplus of births over deaths of 60,393. In 1920, there were 10,841 immigrants to Sweden and 10,242 emigrants departed therefrom, of whom 6,691 came to the United States. The urban population is on the increase, having grown from 1,103,951 in 1900 to 1,744,797 in 1921 or about 30 per cent of the entire population. The chief cities of the kingdom, with their populations, are the following: Stockholm, the capital, 419,429; Goteborg, 202,366; Malmo, 113,558; Norrkoping, 58,101; Halsingborg, 47,074; Gavle, 37,746; Orebro, 36,033; Vasteras, 30,633; Eskilstuna, 30,253; Jonkoping, 29,284; Upsala, 28,897; Boras, 28,233; Karlskrona, 27,055; Linkoping, 26,920; Lund, 23,211; Landskrona, 20,173; and Karlstad, 19,246.

Religion.—The Lutheran Protestant Church is the state church, which has 5,497,689 adherents. This church has 12 bishoprics with Upsala as the metropolitan see. Other creeds are the Roman Catholic with 3,070 adherents; and 14,715 Protestant Dissenters, Baptists and Methodists; 6,112 Jews and the remainder of no stated faith.

Education.—Primary education is free and compulsory between the ages of 7 and 14 years. In the primary schools of the kingdom there are 24,833 teachers and 708,821 pupils. There are 77 public secondary schools with 28,562 students; 15 normal schools with 2,695 pupils; 51 people's high schools with 2,944 pupils; two high and seven elementary technical schools with 4,000 students; five navigation schools with 378 students; and a number of special schools, agriculture, veterinary science, for deaf mutes, the blind, etc. For higher education there are the universities of Upsala and Lund with 2,493 and 1,423 students respectively. In addition there are private universities at the capital and at Goteborg and a state faculty of medicine at the capital.

Finance.—In the fiscal year 1922 the revenue of the government amounted to \$253,796,990 and the expenditure to \$258,576,989. The total public indebtedness of the kingdom 1 March 1923 amounted to 1,566,000,000 kronor (kronor at par equals 26.8 cents; about 24 cents in 1922).

As a result of the rearrangement of the Swedish fiscal year to include the months between 1 July and 30 June, instead of the

calendar year, it is impossible to compare the budget presented for the first six months of 1923 with the preceding budget, which included 12 months. The 1923 budget provided for revenues of 336,900,000 crowns (1 crown = \$0.2680) and expenditures of 372,300,000 crowns, or a deficit of 35,400,000 crowns, to be made up by loans. At the same time an additional budget of 300,000,000 crowns was voted for 1922.

If it be assumed that the last half of the year will cost the same amount as the first six months, the budget for 1923 will total 744,000,000 crowns. If an average "additional" budget of 300,000,000 crowns be added, the total for 1923 exceeds 1,000,000,000 crowns.

Production.—The population is about equally divided between those engaged in agriculture and those who pursue commerce and industry. There are 428,026 farms in the country, of which 119,899 are of two hectares or under in extent (hectare equals 2½ acres approximate), 270,625 are from two to 20 hectares; 34,926 from 20 to 100 hectares and 2,576 above 100 hectares. The acreage and yield of the chief crops for the year 1921 follow:

Crop	Hectares	Yield (tons)
Wheat.....	145,645	342,293
Rye.....	369,607	706,445
Barley.....	161,974	268,361
Oats.....	711,045	1,111,828
Mixed corn.....	263,235	493,889
The legumes.....	44,747	67,417
Potatoes.....	147,582	1,864,974
Sugar beets and fodder roots.....	136,752	4,402,773
Hay.....	1,354,877	4,268,166

The value of the entire crop of 1920 was estimated at 2,016,000,000 kronor and that of 1921 at 1,384,000,000 kronor. The latest livestock census showed 2,550,828 head of cattle, 1,563,654 sheep, 716,783 hogs and 715,681 horses.

Iron mining is one of the oldest and most important of Swedish industries. Lack of coal has retarded this industry somewhat in recent years but the advent of electric smelting has again raised it to a first place. In 1920, Sweden produced 4,519,112 tons of iron ore; in 1921, 308,600 tons of pig-iron were produced and 230,900 tons of ingot iron. In 1920 there were produced 2,901 tons of lead and silver ores; 1,136 tons of copper ore; 47,674 tons of zinc ore; 14,926 tons of manganese ore and 107,326 tons of sulphur pyrites; and 439,584 tons of coal. The mining industries in that year gave employment to 44,401 persons, of whom nearly 4,000 were under 18 years of age. The chief manufacturing industries with the number of establishments, working operatives and value of output are as follows: Mechanical workshops, 859 establishments, with 51,532 operatives producing goods to the value of 545,138,152 kronor; 115 bar iron and steel works, with 22,348 hands producing 339,972,937 kronor; 924 flour and grain mills with 3,245 hands, value of output, 280,780,668 kronor; 413 chemical works with 16,079 hands producing goods valued at 272,848,627 kronor; 69 cotton-spinning and weaving works with 11,640 hands producing goods valued at 179,361,281 kronor; 400 iron and steel goods works with 15,500 hands, producing goods to the value of 174,959,519 kronor; 19 tobacco

factories with 5,645 hands, products valued at 157,778,181 kronor; 113 wool-spinning and weaving works with 9,342 hands, products valued at 138,325,742 kronor; 103 shoe factories with 6,966 hands, products valued at 117,244,668 kronor; and 26 sugar works with 7,817 hands and products valued at 114,926,942 kronor.

Commerce.—In 1921 Swedish imports were valued at 1,266,237,485 kronor and exports at 1,097,273,992 kronor. In the first nine months of 1922 imports were valued at \$220,966,270 as compared with \$256,895,763 for the same period in 1921. Exports for the same period were valued at \$209,842,877 as compared with \$210,943,035 in the first nine months of 1921. The bulk of the foreign commerce is with Great Britain, Germany, Denmark and the United States.

Communications.—The merchant marine of Sweden, on 1 Feb. 1923, consisted of 2,901 vessels of 1,253,000 tons. Sweden has 9,420 miles of railways, of which 3,459 miles are the property of the state; 49,080 miles of telegraph lines served by 3,434 telegraph offices; and 389,830 telephone instruments with a total of 410,000 miles of wire. The profits of the State railways in 1922 came to 24,000,000 crowns.

Defense.—There is universal military service coupled with voluntary enlistment. The peace strength of the land forces consists of 2,660 officers, 1,987 non-commissioned officers, 14,378 men voluntarily enlisted and 72,700 conscripts. The total number on roll is about 655,000 men. The navy is merely for the purpose of coastal defense. It consists of 13 light-armored cruisers, 10 destroyers, four old torpedo boats, 27 modern torpedo boats, and 14 submarines. The naval personnel is about 5,000 officers and men.

Government.—The King, who must be a member of the Lutheran Church, enjoys the executive power, which is exercised through the Council of State, and also a measure of legislative power in conjunction with the bicameral Diet or Parliament. The First Chamber of the latter has 150 members, elected for terms of eight years by the members of the Landstings or provincial representations and certain qualified electors of six cities. The Second Chamber has 230 members elected for four years by universal suffrage. The Council of State or Ministry is headed by the Minister of State. In 1922, the Minister of State was Hjalmar Branting. The reigning sovereign was Gustaf V, who succeeded on the death of his father, 8 Dec. 1907.

History.—The bankers of the country and the financial experts succeeded in stabilizing the currency at the beginning of the year. The result of their efforts was that the Swedish money was placed almost on a par with the American dollar and hopes were raised of an early business revival in all Scandinavian countries. Trade negotiations with Soviet Russia were initiated but proceeded slowly. The Swedish Communist Party sent a delegation to Moscow and there reported that the prospects for a revolution in Sweden were slight and on their return the party decided to support the Socialist administration of Branting. When the result of the Washington Conference on the Limitation of Armament was announced, Sweden acquiesced in

the main features but stated officially that she "could not accept the banning of the submarine, which is the most efficient weapon of defense for small nations." The Government extended the period of suspension of gold payments to 31 March. In the capital there were established schools for the unemployed at which a free meal was served daily to each jobless pupil. Professors, engineers and others donated their services as lecturers. On 25 February a trade agreement was made with Soviet Russia. It followed the lines of the agreements between Russia and England and between Russia and Italy. It did not touch on the question of compensation for damages to Swedish parties nor with the recognition of the Soviet Government. Navigation along the east coast of Sweden was practically at a standstill during the winter which was the most severe that northern Europe had experienced in a quarter of a century. By the middle of February, Gotheborg was shut in by ice and the navigation of the Cattegat and the Sound was well nigh impossible. On 18 March there convened at Stockholm the representatives of those countries that had been neutral during the Great War to discuss a common policy for the neutrals at the forthcoming Genoa Conference. The Swedish-Soviet agreement encountered considerable opposition in the Riksdag because of its failure to settle the question of compensation pending between the two nations. As a result of this opposition the Parliamentary Commission on 31 March advised against the conclusion of a treaty of commerce with Soviet Russia. On 8 April the Riksdag repealed the sliding tariff on imported grain and re-established the old system of fixed tariffs. Measures were taken by the government against the dumping of foreign goods on the Swedish market. Industrial and commercial recovery were greatly hastened by the termination, on 19 May, of the lumber mill lock-out. The dispute was composed by agreement of both parties to a 33 per cent wage reduction below the agreement of 1921.

Diplomatic methods failed to settle the two shipping questions between Sweden and the United States and Sweden appeared to seek the consent of the Washington administration to submit both questions to the Hague World Court. One question concerned vessels of the United States Shipping Board; America claiming that since these vessels are government-owned they are entitled in Swedish waters to the same extra-territoriality as vessels of war, while Sweden holds that they are entitled to privileges no greater than those ordinarily conceded to non-Swedish merchantmen. The second question was the Swedish claim for indemnity for the Swedish vessels building in the United States and requisitioned by the American government as a war measure. In August there developed friction with Denmark over the visit to Flensburg of the Swedish war fleet. The Danish press accused Sweden of "selecting Flensburg for demonstrating Sweden's everlasting friendship and loyalty toward Germany." On 27 August a plebiscite was held on the prohibition of alcoholic liquors. The returns showed such a defeat for prohibition that the question is considered dead in Sweden for at least a generation. The

rationing of liquors by the Government won such popularity by its economic and moral success that the majorities in favor of continuing it were in many districts overwhelming. The Russian Soviet Government granted a concession for a private bank to a Swedish capitalist, the bank to be established in Moscow with a capital of 10,000,000 gold roubles and with the privileges of a state bank. Professor Gustav Cassel accepted the commission of adviser to the bank. The bank is to relieve the Soviet Government of all financial management and issuance of bank notes and to manage all banking accounts and business on a purely banking basis. From 5 November, Sweden prohibited radio operation on foreign vessels in Swedish waters within 10 miles of a coastal radio station, exceptions being made in cases of emergency. Foreign ships in Swedish harbors are forbidden to receive radio messages without permission from the Telegraph Directorate. In the elections to the Provincial Councils held in October the Liberal Party seats dropped from 291 to 192 while the Social Democrats rose from 322 to 346 and the Communists from 21 to 31. Several agricultural and economic associations petitioned the government to prohibit the importation of American wheat and rye but the petition was denied on 10 November. At the close of the year the Government party (the Social Democrats) under the leadership of Hjalmar Branting was in a stronger position than at the beginning due to the elections referred to above and to the firm policy of the Government in its foreign relations.

SWEDENBORGIANS. See CHURCH OF THE NEW JERUSALEM.

SWEET BRIAR COLLEGE, a non-sectarian educational institution for women, founded 1906 (chartered 1901), and located at Sweet Briar, Va. In 1922-23 it had a faculty of 33 members, 321 students, property which cost \$620,374; but is estimated now as being worth over \$1,000,000, and an income of \$191,511.24. Emilie W. McVea, A.M., Litt.D., LL.D., is president.

SWEET POTATOES. The Department of Agriculture estimated the 1922 sweet potato crop of the United States at 109,534,000 bushels, as compared with the 1921 crop of 98,654,000 bushels, and the 1920 crop of 103,925,000 bushels. The acreage for the three years was 1,116,000 in 1922, 1,066,000 in 1921 and 992,000 in 1920. Based on 1 December prices the farm value of the 1922 crop was estimated at \$84,492,000. Alabama led the States in production with a total yield of 13,490,000 bushels. Georgia produced 12,616,000 bushels; North Carolina, 12,430,000; Mississippi, 11,445,000; South Carolina, 9,568,000; Texas, 8,715,000; Louisiana, 7,820,000; Virginia, 6,210,000; Tennessee, 4,180,000; Arkansas, 3,760,000; New Jersey, 3,500,000; Florida, 2,720,000; Oklahoma, 2,052,000; Kentucky, 2,020,000; Delaware, 1,720,000; Maryland, 1,530,000; Missouri, 1,330,000; California, 880,000; and Illinois, 855,000. No other State produced as much as 500,000 bushels.

SWEET POTATO WEEVIL. See ENTOMOLOGY, UNITED STATES BUREAU OF.

SWIMMING. See SPORTS.

SWINE. See AGRICULTURE IN THE UNITED STATES.

SWINE PLAGUE. See HEMORRHAGIC SEPTICEMIA.

SWITZERLAND, a Federal Republic of Europe, bounded on the north by Baden, northeast by Bavaria and Wurtemberg, east by Lichtenstein and the Tyrol, south by Italy and west and northwest by France. The Republic has an area of 15,976 square miles with a population of 3,880,320 on 1 Dec. 1920. German is the language of 2,600,000; French of about 800,000; Italian of about 350,000 and the Romansch of about 45,000. There are about 400,000 foreigners in the Republic. In 1920, there were 83,623 births, 34,973 marriages and 58,427 deaths, leaving a surplus of births over deaths of 25,196. Illegitimate births were 4.2 per cent of the total in 1920. The chief cities are: Zurich (207,161); Basle (135,976); Geneva (135,059); Bern, the Federal capital (104,626); Saint Gallen (70,437); Lausanne (68,533); Winterthur (49,969); and Lucerne (44,029).

Religion.—While nominally there is full liberty of conscience, no bishoprics may be created on Swiss territory without the consent of the Federation, nor can the order of the Society of Jesus and its affiliated societies exercise any functions either clerical or scholastic in the Republic. The same prohibition may be extended to any other religious orders whose actions may be deemed dangerous to the state, nor may new convents or religious orders be founded. Protestants are a majority in 12 of the Cantons and Roman Catholics in 10. The latter number 41 per cent of the total population, and the former 57 per cent. Jews number 20,955. The Roman Catholics have five bishops immediately subject to the Holy See. The Protestant Church is Calvinistic in doctrine and Presbyterian in form and is under the supervision of the magistrates of the Cantons.

Education.—Education is not centralized but is left in great part to the communes. Primary education is free and compulsory. There are 4,222 schools with 16,753 teachers and 545,135 pupils; 516 secondary schools with 2,301 teachers and 49,692 students. In addition there are commercial and technical schools, schools for the teaching of domestic economy, schools of agriculture and horticulture, viticulture, and dairy management and special schools for the blind, deaf, etc. The total expenditures on primary education in 1920 was 2,377,529 francs. For higher education there are seven universities—with an aggregate student body of 6,649. These institutions are located at Basle, Bern, Zurich, Geneva, Lausanne, Fribourg and Neuchatel. There is a Polytechnic School at Zurich with 281 members of the faculty and 2,267 students. Switzerland has 5,798 libraries with 9,385,000 volumes.

Production.—About 28 per cent of the total area of the country is unproductive, while nearly 30 per cent of the remainder is under forest; 35 per cent under grass and pasture; 18 per cent under fruit and 16 per cent under crops and gardens. In 1921, wheat was planted on 111,275 acres and yielded 97,282 tons; rye was planted to 50,000 acres and yielded 39,599 tons; oats on 53,075 acres yielded 44,063 tons. Potatoes are also a staple crop. Cheese making and the manufacture of condensed milk are the chief industries

connected with agriculture. Wine is produced in five Cantons and tobacco in three Cantons. The last live stock census showed 1,382,116 head of cattle, 729,999 dairy cows, 240,553 sheep, 546,112 swine, 333,852 goats, 3,581 mules, 129,269 horses, and 891 donkeys. There are 2,105,214 acres under forest, which area may not be reduced. There are very strict regulations regarding the forests, the cutting of timber thereon, gathering of firewood, etc. Bee-keeping is increasing in importance, 29,377 persons being engaged at present in this industry. There are five salt-mining districts, the output from which was 591,558 quintals in 1919. There are 8,787 factories in the Republic, of which those connected with the watch and clock-making industries are the most important.

On 6 Dec. 1921, the Swiss Federal Council (Bundesrat) appropriated 5,000,000 francs as a temporary subsidy to aid Swiss watch manufacturers in competing in countries having depreciated currencies.

From December 1921, to July 1922, Switzerland exported 7,350,000 francs worth of watches and clocks to Germany, 2,480,000 francs to France, 1,775,000 francs to Belgium, 1,642,000 francs to Italy, 1,639,000 francs to Argentina, and 1,526,000 francs to Czechoslovakia. The filling of these orders would make possible the reinstatement of 2,399 unemployed workmen. Switzerland exported \$1,299,432 worth of watches, clocks, and parts to the United States during the last quarter of 1921, and \$1,391,000 worth during the first quarter of 1922.

About 381,000 persons are employed in the several manufacturing industries. Brewing and embroidery-making are also among the important industries.

Commerce.—The total import trade of Switzerland in 1922 (exclusive of minted precious metals) was valued at 1,914,465,119 francs, compared with 2,296,288,894 francs in 1921. Exports amounted to 1,761,576,533 and 2,140,141,442 francs, respectively, in the same years. The decrease in imports was 16.6 per cent, and in exports 17.7 per cent. Exports of watches and clocks in 1922 amounted to 168,535,985 francs compared with 157,958,605 francs in 1921.

Communications.—Switzerland has 3,881 miles of state railways and about 40 miles of foreign line within the country. The state rail lines are being electrified. At the close of 1922 about 325 miles had been electrified and it was estimated that the entire system would be electrified at the end of 30 years. There are 3,941 post-offices; 1,664 miles of telegraph line with 20,145 miles of wire and 2,404 offices; 941 telephone systems with 13,917 miles of line and 272,667 miles of wire.

Finance.—The accounts of the Swiss Confederation for the fiscal year 1921, made public in August 1922, showed expenses of 508,431,226 francs and receipts amounting to 380,859,356 francs, leaving a deficit of 127,571,870 francs, as against a deficit for the year 1920 of 99,536,730 francs. This was the largest deficit shown up to that time by the Federal account. It brought the total excess of expenses over income to about 500,000,000 francs since 1914, as follows: In 1914, 22,533,117 francs; 1915, 21,551,507 francs; 1916, 16,645,456 francs; 1917, 50,-

747,865 francs; 1918, 61,894,688 francs; 1919, 95,655,687 francs; 1920, 99,536,730 francs; and 1921, 127,571,870 francs.

There has been no budgetary balance in Switzerland since the war. Before the war the Government had a net surplus of 102,512,575 francs. This was entirely wiped out in meeting successive deficits. Moreover, service on the debt was increased by about 25,000,000 francs per year.

According to the *Neue Zürcher Zeitung* of Zurich, Switzerland, the Swiss budget for 1923 estimates revenue at 430,700,000 francs and expenditure at 511,500,000, leaving a deficit of 80,800,000. This compares with an actual deficit of 99,400,000 in 1922 and of 127,571,870 in 1921.

It is stated that the postal, telegraph and railway departments contribute 7,000,000 francs to the deficit and that interest on the national debt now amounts to 114,600,000 francs, against 113,400,000 in 1922.

Defense.—Service in the national militia is compulsory and universal there being few exceptions allowed. Liability extends from the 20th year to the 48th. The number of combatant troops in the field army is about 140,000 officers and men, while the total possible mobilization is about 200,000. An aviation service was inaugurated in 1919.

Government.—The Federal Government is supreme in matters of peace, war and treaty-making, the administration of the army, railways, posts and telegraphs, coining of money and issue of bank notes. The supreme executive and legislative authority are vested in a parliament of two chambers—a State Council and a National Council. The former has 44 members or two from each Canton. Their mode of election and their term of office depend entirely on the Canton. The National Council has 189 representatives chosen by direct election and proportionally to the population, one for every 20,000. In the elections held 29 Oct. 1922, 153 members of the Coalition Party were returned while 45 members of the Opposition were elected. The new National Council has 10 Protestant Liberals, 44 Roman Catholic Conservatives, 59 Radicals, 35 deputies of the Farmers and Middle Class Party, 5 Social Reformers, 43 Socialists, and 2 Communists. The result of the election which tended to stabilize the conservative forces of the nation was attributed to the feeling against the Socialist demand for a levy on capital, which among all classes met with increasing opposition and was rejected by a vote of 7 to 1 in the referendum held for the purpose on Sunday, 3 Dec. 1922.

The President and Vice-President of the Swiss Confederation are elected by the Federal Assembly in joint session for terms of one year; the President being ineligible for the term following, but the Vice-President is usually elected to succeed the outgoing President. The President for 1922 was Dr. Robert Haab; the Vice-President Charles Scheurer.

Some Recent Issues.—A popular referendum in which 90 per cent of the citizens voted in September, defeated a drastic law which aimed to repose in the authorities powers to deal with revolutionaries. The vote was 373,000 against to 300,000 for the law. The rejection came as a

surprise since both chambers of the Parliament had voted for the measure. The law would have given power not only to repress acts against the public security but even general strikes of a political character. The Catholic cantons were the only ones to vote acceptance of the law. An agreement was sought with France on the improvement of the Rhine as suggested in the Treaty of Versailles. Switzerland was not bound by the treaty but continues to adhere to the established custom which calls for a navigable Rhine from Basle to the sea. France seeks the use of part of the upper river for water power which necessitates dams. As soon as plans for the project are arranged parleys will take place with the states concerned. The Socialists were defeated in the elections for the National Council and the defeat settled the fate of the Socialist bill for a levy on capital. The reduction of armament engaged the attention of the National Council in October on the relation between the Swiss National Assembly and the Third Assembly of the League of Nations. Throughout the campaign on the capital levy the country was on the verge of a financial panic. Bank deposits were withdrawn and capital amounting to over 5,000,000,000 francs was exported; stocks fell rapidly; industrial enterprise stopped and business was virtually halted. A printers' strike was fomented by the Socialists in a vain effort to throttle the campaign against the levy and many newspapers were not published for over two weeks. Troops patrolled Lausanne to keep the radicals in order. The result—704,785 to 101,057—was so decisive that labor leaders and Socialists felt that they could count on little popular support for their threatened strikes should the vote be adverse to them.

SYPHILIS. See MEDICINE AND SURGERY, ADVANCEMENT OF; PUBLIC HEALTH SERVICE, UNITED STATES.

SYRACUSE UNIVERSITY, a co-educational institution, founded in 1870 and located at Syracuse, N. Y. Though founded and patronized by the Methodist Episcopal Church, it is nevertheless, non-sectarian. In 1922-23 it had a faculty of 450 members, 7,000 students, property valued at \$7,000,000, and an income of \$900,000. Charles W. Flint, D.D., LL.D., is president.

SYRIA, a province of Turkey in Asia, which by the Treaty of Peace with Turkey following the World War signed 10 Aug. 1920, was recognized as an independent state to be placed under a mandatory power. The mandate was given to France by the Supreme Council. Man-

dated Syria is bounded north by Turkey, south by Palestine, east by Mesopotamia and west by the Mediterranean. The total area is about 60,000 square miles with a population of 3,000,000. Arabic is the principal language of the inhabitants. The chief towns are Aleppo and Damascus (250,000); Beirut (180,000); Hama, Hama and Aintab, with about 65,000 each; Tripoli, Latakia and Antioch, with 30,000 each. Agriculture is the chief occupation of the inhabitants. Cereals, vegetables and fruits are grown in great quantities. The wheat crop averages over 1,000,000 tons yearly. Barley, Indian corn, oats and rye are grown in lesser quantities. The tobacco crop is about 3,000,000 pounds yearly, valued at \$1,000,000. Cotton, hemp and sugarcane are among the lesser crops. The principal fruits are the olive, vine, mulberry, and orange. The mulberry is cultivated especially in the north for the feeding of the silk worm. The last census of live stock showed 270,000 horses, mules and asses, 500,000 head of cattle, 4,500,000 sheep and goats and 200,000 camels. The mineral resources are not well known but iron and lignite are worked. Gypsum, marble and building stone are widely distributed. In pre-war years the commerce of Syria averaged £3,636,000 for exports and £6,653,000 for imports. The exports consisted mostly of raw silk, sheep, goats and cattle, oranges and lemons, wool, tobacco and sesame. The principal imports were cotton textiles, coffee, sugar, flour, metals and their manufactures. About 200 miles of the Bagdad Railway runs through Syria and 600 miles of the Hejaz Railway.

The French policy is to retain permanently the entire province of Syria. Palestine was formerly included as a vilayet of the province but was released under separate mandate to Great Britain. France seeks to give the natives an ever increasing share in the administration of the country and the flag chosen is the French tricolor with a cedar on the white ground. In 1922, the trade of Syria with the United States amounted to \$3,920,771. The French High Commissioner of Syria in 1922 was General Gouraud. A French army is in full occupation. On 22 July 1922 the Council of the League of Nations confirmed the mandate of Syria to France. The victory of the Turks over Greece interfered with the Allied plans for effecting a settlement of the Turkish question and France toward the close of the year viewed the revived Turkish aspirations toward a restoration of her former territories with anxiety.

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TACNA-ARICA DISPUTE. See PEACE AND ARBITRATION, INTERNATIONAL.

TAHITI. See OCEANIA, FRENCH ESTABLISHMENTS IN.

TAIWAN, or FORMOSA, an island belonging to Japan and situated off the coast of Fukien, China. Its area is 13,911 square miles and its population, 3,654,398 in 1920. The chief city, Taihoku, has a population of 107,706. The island produces rice, sugar, tea, potatoes, jute and turmeric. About 8,000,000 acres are yearly planted to rice with a normal yield of 38,000,000 quarters. In 1921 the wheat crop was 3,564,418 quarters; barley, 5,758,393 quarters; rye, 4,518,984 quarters and rice 33,750,000 quarters. Placer gold is worked. Silver, gold and copper are also found in commercial workings. Coal and oil fields are a recent development. Sulphur and magnetic iron ore are also important. The fisheries are extensive. Flour milling, sugar, tobacco, oil, spirits, soap, bricks, glass and iron work are among the chief manufactures. There are 60 sugar mills. Trade is mostly with Japan, but there is a large trade with the United States and China. Tea, camphor, sugar and coal are the chief exports. Opium, rice, oil cake, beans, and tea seed are the principal imports. Trade with Japan amounts to 225,000,000 yen yearly. The budget was estimated to balance at 94,368,309 yen for the year 1921. The island was called Formosa while under China's regime. It was ceded by the latter to Japan in 1895 and Japanese civil administration was set up 31 March 1896.

TAKAMINE, Jokichi, Japanese-American chemist: b. Takaoka, Japan, 3 Nov. 1854; d. New York, 22 July 1922. He was the son of a Samurai of the Kanagawa clan, also physician to the Prince of Kaga. At the age of 12 he was sent to Nagasaki to study under the Portuguese consul and later went to Osaka to study medicine. He was one of the first graduates from the Imperial University of Japan at Tokio in 1879, taking his degree in chemistry and engineering. He then was sent as a government student to the University of Glasgow, and the Andersonian University of Glasgow, where he remained three years. On his return to Japan, he was appointed head chemist of the Department of Agriculture and Commerce, Tokio, where he did much to improve the brewing of saké and the making of indigo. His appointment as Japanese Commissioner to the Cotton Centennial at New Orleans in 1884-85 was the turning point in his life. Here he met Miss Caroline Hitch, whom he married and then planned to spend the rest of his life in the United States. In 1887 he went to Tokio to erect the first superphosphate works in Japan, and on his return to America in 1890 began that research work which brought him worldwide recognition. In 1894 he discovered taka diastase, which is obtained from a fungus growth mainly on the rice plant (known as

"*aspergillus oryzae*") largely used in the fermentation of saké (or rice-beer) in Japan, and used by physicians for starch digestion. A company was formed in Chicago for the manufacture of this product, which soon became very profitable. In 1900, through experiments with the glands of sheep, he discovered adrenalin. He also introduced many industries into Japan, among which were soda works, fertilizer works, dye, alkali and aluminum and also founded a large pharmaceutical corporation. He established a chemical and physical research laboratory in Tokio and also one of his own at Clifton, N. J. In 1906 he was made doctor of chemical engineering in the University of Japan and Doctor of Pharmacology. He was decorated by the Japanese Emperor with the Fourth Order of the Rising Sun in 1915. He became a member of the Japanese Royal Academy of Science in 1913. He founded the Nippon Club of New York, of which he was president, the Japan-American Society, the Chemical and Physical Research Society of Japan and was one of the founders of the Japan Society of New York and the Japanese Association of New York. Doctor Takamine was also a member of numerous clubs and societies. Doctor Takamine was probably the best known Japanese in this country. He labored very earnestly to promote better relations between Japan and the United States.

TALLADEGA COLLEGE, a co-educational institution for colored students, under the auspices of the Congregational Church. It was founded in 1867 and located at Talladega, Ala. In 1922-23 it had a faculty of 45 members, 520 students, and property valued at \$800,000. Income not given. Frederick A. Sumner, B.D., is president.

TANGANYIKA TERRITORY, formerly German East Africa, now under mandate to Great Britain. The former colony was divided after the war into Belgian and British spheres of influence. The provinces of Ruanda and Urundi on the shores of Lake Tanganyika were included in the Belgian sphere with headquarters at Kigali. The remainder was included in the British sphere with headquarters at Dar-es-Salaam. The area of the colony is 365,000 square miles with a native population of 7,659,898 at the time of the last German enumeration. The population of the British section, or Tanganyika proper, is about 4,000,000 and consists mostly of tribes of mixed Bantu race. In the Territory there are 45 Government schools with 71 native teachers and 3,500 pupils. There are Protestant and Roman Catholic missionary societies at work in the Territory. There is a considerable area under forest, about 2,700,000 acres, in which grow cedars, yellow woods, a species resembling teak, ebony, bamboo, etc. In the Territory are several plantations of coffee, coco-palms, rubber, cotton, sugar, cinchona and fibre plants. There are about 3,000,000 head of cattle and 5,000,000 sheep and goats. The chief

exports are sisal, cotton, hides, skins, copra, coffee, wax, ground-nuts, grain, rubber and ivory. The imports are mostly cotton textiles, rice and other foodstuffs, kerosene, tobacco and spirits. The revenue of the Territory is approximately £1,150,000 yearly balanced by an equal amount of expenditure. The chief port of the Territory is Dar-es-Salaam. This port is connected by railway with Kigoma, 780 miles. Another line runs from Tanga to New Moshi, a distance of 220 miles. There are 43 post offices and telegraph stations. The Governor and Commander-in-Chief in 1922 was Sir H. A. Byatt. He is assisted by an Executive Council, the members of which are all nominated. No provision has been made for the representation of the white settlers.

TANTALUM. See CHEMICAL MANUFACTURING; METALLURGY.

TARKIO COLLEGE, a co-educational institution under the auspices of the United Presbyterian Church, founded in 1883 and located at Tarkio, Mo. In 1922-23 it had a faculty of 18 members, 235 students, property valued at \$690,000, which includes an endowment of \$435,000, and an estimated income of \$85,000. Rev. J. A. Thompson, D.D., LL.D., is president.

TARIFF OF 1922. A tariff is a more or less selfish proposition, and the making of one arouses all sorts of selfish antagonisms and disputes. The Fordney-McCumber Tariff Act, which became a law, 22 Sept. 1922, was no exception to its predecessors in the amount of bickering and contention which its framing involved. After being framed by the House of Representatives and passed 21 July 1921, it went to the Senate, was hung up in the Finance Committee until 11 April 1922, and reported with 2,082 amendments. The amendments so increased that when it was passed by the Senate 19 Aug. 2,436 amendments had been tagged on. The bill then went to conference, got to the House 12 September was sent back by the House to conference 13 September a large majority voting to instruct the conference to eliminate the embargo on dyestuffs and the duty on potash. Being modified, the bill passed the House by 210 to 90 on 15 September. Four days later it was passed by the Senate by a 43 to 28 vote, and 21 September President Harding signed it, and it went into operation at 12:01 the next morning.

The measure was put through by the Republican party, by a nearly complete party vote. It is obviously a high tariff, designed to increase revenue and to extend more "protection" to certain industries. Only experience can demonstrate just what will be its effect on business; but it is safeguarded in a way absolutely unprecedented in the history of American tariff legislation. The President is authorized to make the basic tariff flexible, in accordance with proved differences in costs of production, to prevent unfair practices in import trade, and to meet discriminating duties or practices against American export trade.

Under section 315 broad powers are granted the President to change classifications and to increase or decrease the basic duties within a range of 50 per cent, upon proof that the duties fixed do not measure the "differences in costs of

production in the United States and the principal competing country." In cases of goods subject to ad valorem duties, when an advance in the rate is not found to equalize the differences in costs of production, the President may order the duty to be assessed upon the American instead of the usual foreign valuation.

Under section 316 the President is empowered to impose additional duties up to 50 per cent ad valorem, or even prohibit the importation of certain articles by particular persons, upon proof of unfair methods of competition in import trade which tend to injure an efficiently operated industry in the United States, to prevent the establishment of such an industry, or to restrain trade within the United States.

Section 317 is designed to assist in the promotion of American export trade by providing that the President may impose additional duties up to 50 per cent, and in exceptional cases even exclude, under penalty of seizure, the products of a particular country, upon proof of the existence and continuance of foreign practices which discriminate in any way against American commerce or shipping as compared with those of any other foreign country.

In order to assist the President in the exercise of his new discretionary authority, the Tariff Commission is granted larger powers and directed to undertake such investigations into foreign or domestic conditions of production and marketing as may be necessary. In order to minimize any commercial uncertainty resulting from the operation of the flexible provisions of the tariff, all such changes are made subject to full investigation and public hearings by the United States Tariff Commission, and announcement of all such changes as are ordered by the President is to be made a period of time before their enforcement.

By Executive order, dated 7 October, President Harding directed that all requests, applications, or petitions for action or relief under the provisions of sections 315, 316 and 317 of Title III of the Tariff Act approved 21 Sept. 1922, should be filed with or referred to the United States Tariff Commission for consideration and for such investigation as shall be in accordance with law and the public interests under rules and regulations to be prescribed by such Commission. In accordance with this order the United States Tariff Commission, under date of 26 October, issued the rules of procedure under which applications and investigations are to be made and hearings held. Copies of these rules are obtainable from the United States Tariff Commission, Washington, D. C., upon request.

Another remarkable provision of this tariff is the extension of the right of seizure and search of vessels along the coast from the old three-mile limit to four leagues, or about 13 miles. This section reads in part:

Sec. 581.—Boarding Vessels.—Officers of the customs or of the Coast Guard, and agents or other persons authorized by the Secretary of the Treasury, or appointed for that purpose in writing by a collector may at any time go on board of any vessel or vehicle at any place in the United States or within four leagues of the coast of the United States, without as well as within their respective districts, to examine the

TARIFF OF 1922

COMPARISON OF TARIFF RATES.

	Payne-Aldrich tariff, 1911	Underwood tariff, 1914	Fordney-McCumber tariff, 1922
Apparel:			
Clothing, etc., of wool.....	44¢ lb and 60%.....	35%.....	24¢ lb and 40% to 45¢ lb and 50%
Women and children's dress goods..	11¢ yd and 50% to 55%..	35%.....	37¢ lb and 50% to 45¢ lb and 50%
Knit woolen underwear.....	44¢ lb and 60%.....	35%.....	36¢ lb and 30% to 45¢ lb and 50%
Cotton knit underwear, etc.....	35% to 50%.....	30%.....	45% and 35%
Wearing apparel, chiefly fur.....	50%.....	50%.....	50%
Hats, bonnets, of straw.....	50%.....	40%.....	50%
Hats, bonnets, of fur.....	\$1 50 doz and 20% to \$7 doz and 20%	15%.....	\$1 50 doz and 25% to \$16 and 25%
Leather gloves:			
Men's.....	\$1 25 to \$4 75 doz pr....	\$1 to \$2 50 doz pr....	\$5 doz pr
Women's, children's.....	\$1 25 to \$4 75 doz pr....	\$1 to \$2 50 doz pr....	\$4 doz pr
Cotton gloves.....	40% to 50%.....	30%.....	25% to 75%
Cotton hose.....	55% to 70%.....	40% to 50%.....	30% to 50%
Chemicals:			
Dyes and explosives (intermediate state).....	20%.....	15%.....	7¢ lb and 55%
Dyes and explosives (finished state)..	30%.....	30%.....	7¢ lb and 60%
Alcohol, amyl.....	1¢ lb.....	1¢ lb.....	6¢ lb
Alcohol, wood.....	20%.....	Free.....	12¢ gal
Ink.....	25%.....	15%.....	20%
Castor oil.....	35¢ gal.....	12¢ gal.....	3¢ lb
Perfumery.....	60¢ lb and 50%.....	40¢ and 60%.....	40¢ and 75%
Soap and powder.....	20%.....	5%.....	15%
Starch, potato.....	1½¢ lb.....	1¢ lb.....	1½¢ lb
Food, etc.:			
Bacon.....	4¢ lb.....	Free.....	2¢ lb
Salmon.....	1¢ lb.....	Free.....	2¢ lb
Macaroni.....	1½¢ lb.....	1¢.....	2¢ lb
Rice.....	2¢ lb.....	1¢.....	2¢ lb
Wheat.....	25¢ bu.....	Free.....	30¢ bu
Wheat flour.....	25%.....	Free.....	78¢ 100 lbs
Beans.....	2¢ lb.....	25¢ bu.....	\$4 ton
Sugar.....	1.16¢ lb.....	.71¢ lb.....	1.24¢ lb
Cheese.....	6¢ lb.....	20%.....	5¢ lb
Beef and veal.....	2¢ lb.....	Free.....	3¢ lb
Milk, fresh.....	2¢ gal.....	Free.....	2½¢ gal
Milk, condensed.....	2¢ lb.....	Free.....	1½¢ lb
Corn.....	15¢ bu.....	Free.....	15¢ bu
Oats.....	15¢ bu.....	6¢ bu.....	15¢ bu
Oatmeal.....	1¢ lb.....	30¢ 100 lbs.....	80¢ 100 lbs
Lemons.....	1½¢ lb.....	1¢ lb.....	2¢ lb
Peaches.....	1¢ lb.....	1¢ lb.....	1¢ lb
Onions.....	40¢ bu.....	20¢ bu.....	1¢ lb
Hogs.....	\$1 50 head.....	Free.....	1¢ lb
Jewelry, etc.:			
Diamonds, uncut.....	Free.....	10%.....	10%
Diamonds, cut.....	10%.....	20%.....	20%
Chains, links, etc.....	60%.....	60%.....	80%
Watch cases and parts.....	40%.....	30%.....	45%
Metals, etc.:			
Pig iron.....	\$2 50 ton.....	Free.....	75¢ ton
Lead bullion.....	2½¢ lb.....	25%.....	2½¢ lb
Zinc, pigs.....	1½¢ lb.....	15%.....	1½¢ lb
Automobiles and parts.....	45%.....	30% to 45%.....	25%
Cash registers.....	40%.....	Free.....	25%
Shovels, etc.....	45%.....	Free.....	30%
Paper:			
News print.....	Free.....	Free.....	Free
Other print paper.....	1¢ lb to 15%.....	12%.....	1¢ lb and 10%
Writing paper.....	3¢ lb and 15%.....	25%.....	3¢ lb and 15%
Spirits, beverages:			
Brandy.....	\$2.60 proof gal.....	\$2.60 proof gal.....	\$5 proof gal.
Champagne.....	\$3.20 proof gal.....	\$3.20 proof gal.....	\$6 proof gal.
Ale and beer.....	45¢ gal.....	45¢ gal.....	\$1 gal.
Ginger ale, etc.....	12¢ gal.....	8¢ gal.....	15¢ gal.
Tobacco:			
Wrappers, unstemmed.....	\$1.85 lb.....	\$1.85 lb.....	\$2.10 lb.
Wrappers, stemmed.....	\$2.50 lb.....	\$2.50 lb.....	\$2.75 lb.
Fillers, unstemmed.....	35¢ lb.....	35¢ lb.....	35¢ lb.
Fillers, stemmed.....	50¢ lb.....	50¢ lb.....	50¢ lb.
Cigars and cigarettes.....	\$4.50 lb. and 25%.....	\$4.50 lb. and 25%.....	\$4.50 lb. and 25%
Sundries:			
Salt.....	11¢ 100 lbs.....	Free.....	11¢ 100 lbs.
Chinaware.....	55%.....	50%.....	60% ad valorem.
Wood furniture.....	35%.....	15%.....	33%
Brooms.....	40%.....	15%.....	15%
Doils and toys.....	35%.....	35%.....	70%
Matches.....	6¢ gross.....	3¢ gross.....	8¢ gross.
Cameras.....	45%.....	15%.....	20%
Umbrellas.....	50%.....	35%.....	40%

manifest and to inspect, search, and examine the vessel or vehicle, and every part thereof, and any person, trunk, or package on board, and to this end to hail and stop such vessel or vehicle, if under way, and use all necessary force to compel compliance, and if it shall appear that any breach or violation of the laws of the United States has been committed, whereby or in consequence of which such vessel or vehicle, or the merchandise, or any part thereof, on board of or imported by such vessel or vehicle is liable to forfeiture, it shall be the duty of such officer to make seizure of the same, and to arrest, or, in case of escape or attempted escape, to pursue and arrest any person engaged in such breach or violation.

A further paragraph of this section gives similar authority to officers of the Department of Commerce and other persons authorized by such department.

To enable the reader to form his own judgment of the alterations made in the tariff at different periods, the preceding table has been compiled, quoting on important articles the rate under the three tariffs—Payne-Aldrich, 1911, Republican; Underwood, 1914, Democratic, and Fordney-McCumber, 1922, Republican.

Free List.—Among the common articles listed as free, are: Agricultural implements, breeding animals, Bibles, bread, household effects of immigrants, linotype and typesetting machines, typewriters, cocoa, coffee, cotton, guano, ice, India rubber, leather boots and shoes, crude petroleum, platinum, quinine, radium, sodium nitrates, silk, tar, tea, tin and pig ore, wax, barbed wire, works of art, cyanide, fish for fertilizer, gunpowder, shingles, unmanufactured lumber and potash.

It is a little early to say what the income from this new tariff will be, or its exact effect on business. Revenue officials at the outset figured that it should bring the Government \$445,000,000 a year, which is \$100,000,000 more than any other tariff returned. That they are right, is suggested by the first month's returns, \$40,868,266, which predicate an even higher total for the year. There is, of course, a great deal of grumbling. Clothing and dress goods already appear somewhat stiffer in price; the minor metals have all gone up in price, manganese has had the tariff added to the price, which permitted the local producers to resume, and will add a trifle to the cost of steel. The chemical trade is reported as not being affected noticeably by the changes. The President has such wide authority in the matter of unfair practices that there seems little chance of serious injury to the public at any point. Further, the great mass of the American public has become so used to high prices and high taxes that they accept a few more with a shrug.

CHARLES H. COCHRANE.

TASMANIA. See AUSTRALIA.

TAYLOR, Hannis. American diplomat and lawyer: b. Newbern, N. C., 12 Sept. 1851; d. Washington, D. C., 26 Dec. 1922. He was educated at the University of North Carolina, studied law and was admitted to the bar in 1870, from which time until 1892 he practiced at Mobile, Ala. From 1893-97 he served as Minis-

ter to Spain. In 1902 he appeared before the Spanish Treaty Claims Commission as special counsel for the United States Government; he also represented the United States before the Alaskan Boundary Commission in 1903. The honorary degree of LL.D. was conferred upon him by Dublin University in 1900, by University of Edinburgh in 1904 and by eight American universities. He published: 'The Origin and Growth of the English Constitution'; 'International Public Law' (1902); 'Jurisdiction and Procedure of the Supreme Court of the United States'. 'The Science of Jurisprudence' (1908); 'The Origin and Growth of the American Constitution'; 'Cicero—A Sketch of His Life and Works'; 'Due Process of Law' (1916).

TAYLOR UNIVERSITY, a non-sectarian, co-educational institution, founded in 1848 as Fort Wayne College. It was moved to Upland, Ind., and renamed Taylor University in 1891. In 1922-23 it had a faculty of 32 members, 300 students, property valued at \$400,900 and an income of \$58,500. John Paul is president.

TEACHERS COLLEGE, a non-sectarian, co-educational institution, founded in 1888 and located in New York City. It is a part of Columbia University. In 1922-23 the college faculty numbered 238 members, while the Schools of Observation and Practice connected therewith, had a faculty of 133 members. Final figures of the student enrollment were not available on 15 January but the registration up to that time was 4,100. The value of the institution's property and its income for the year 1922-23 are not given. James E. Russell, LL.D., is dean.

On 10 Feb. 1923 it was announced that Teachers College had succeeded in raising a fund of \$2,000,000, which it was required to raise by 1 Jan. 1923 in order to enable it to obtain a conditional gift of \$1,000,000 from the General Education Board. The \$3,000,000 will be divided and \$2,000,000 be used for new library building while \$1,000,000 will go to endowment purpose. Toward the \$2,000,000 the College raised, and in order to complete the amount John D. Rockefeller contributed \$171,697, and George F. Baker and Edward S. Harkness \$1,000,000 each. The trustees of the College gave \$1,512,365; students, patrons, members of the faculty and alumni, \$90,686.92.

TELEGRAPH AND CABLE COMPANIES, Mileage and Revenues of. According to a report of the Interstate Commerce Commission, made public 9 Jan. 1923, the telegraph and cable companies of the United States, in 1921, had 1,858,172 miles of wire and a capital investment in plants of \$270,975,730. Investments in other property totaled \$20,548,943. The operating revenue of the companies for the year amounted to \$136,663,438 and their operating income to \$18,667,408. Their net income was \$13,310,975, out of which they paid dividends amounting to \$9,078,399. The Western Union and the Mackay companies owned the bulk of the mileage and, of course, produced the bulk of the revenue, operating and net income. The Western Union Company had a mileage of 1,522,062. Its plant investment was given as

amounting to \$187,488,638 and its other investments as \$19,210,378. Its net income totaled \$9,685,512, out of which it paid dividends amounting to \$6,982,623, at the rate of 7 per cent. The Mackay companies had a mileage of 302,810; a plant investment of \$50,187,902, and a net income of \$1,042,294, out of which they paid dividends totaling \$499,520 at the rate of 10 per cent.

TELEPHONE PROGRESS. An outstanding recent development in telephony has been the rapid extension of the use of machine switching apparatus in central offices. Means have been developed for operating full mechanical central offices in conjunction with manual switchboards in the same exchange area which permit the subscribers connected to the full mechanical switchboard to dial calls to the manual switchboards in the same way as calls to the full mechanical switchboards. With this arrangement, the mechanical apparatus selects a trunk to the manual switchboard and by means of lamps and illuminated figures indicates to the operator at the manual switchboard the trunk selected and the subscriber's number desired. She thereupon connects the trunk to the called subscriber's line in the usual way. On calls from the manual office to the machine switching office, the subscribers pass the number desired to their operators in the usual way. Under one arrangement the operator at the manual switchboard thereupon operates a set of keys which control the selection of a trunk to the machine switching office and of the proper subscriber's line at that office. Under another arrangement, the operator passes the call to a second operator at the machine switching office who assigns a trunk and operates keys causing the machinery to select the desired subscriber's line and connect it to the trunk assigned.

These developments have made it practicable to introduce the full mechanical system gradually into large cities by using it for extensions and replacements. Apparatus of this sort is already in operation in New York, Omaha, Kansas City, Philadelphia, Providence and other large cities and is under installation in many other places, working in conjunction with the manual switchboards in the same cities.

Another important application of machine switching apparatus in large cities is in connection with calls requiring tandem trunking, that is, the switching together of two trunks to reach the desired point. When machine switching apparatus is applied to this service, the calling subscriber, if he is in a manual office, passes the call to his operator, and she passes it in the usual way to an operator at the intermediate switching point. This second operator operates a set of keys which controls the selection of a trunk to the terminating office, and, if this is a machine switching office the selection of the subscriber's line by the machine switching apparatus. If the terminating office is manual, the number desired is indicated to an operator in that office by illuminated figures. This apparatus is also adapted to handling calls originating at a full mechanical office without requiring an operator at the intermediate switching point.

For use in large cities, the selectors are built in the form of large panels with 500 lines

connected to one frame and with 60 pairs of brushes provided for each frame, 30 on each side of the panel. A frame of this sort is illustrated in Fig. 1.

There has been a rapid extension in America of the use of improved arrangements for long distance telephony which are described in the article TELEPHONE, in 'The Americana.'

The Boston-Washington underground cable route has been extended by cable, largely aerial, running now as far west as Pittsburgh and Cleveland and to be extended to Chicago. In this way, the Atlantic Coast cities will be connected together and with Chicago, Toledo, Detroit and other mid-western cities by a telephonic route providing a large number of telephone circuits of high efficiency and very free from interruptions.

The transcontinental circuits have been further improved by the use of improvements in telephone repeaters. With these improvements, best results are now obtained on large gauge open wire circuits without loading coils and with the use of repeaters at an average spacing of 250 or 300 miles. There are now 12 repeaters in tandem in a circuit between New York and San Francisco.

The year 1921 marked the completion of a project to connect Cuba with the United States by means of submarine telephone cables between Havana and Key West. As the distance is about 115 miles and the water over 6,000 feet deep, these cables are the longest and deepest submarine telephone cables in the world. It was necessary that these cables should not only give satisfactory communication between Havana and Key West but serve as a high efficiency link between points in Cuba and distant points in the United States. This fact and the physical conditions necessitated the solution of a large number of difficult and involved problems. Three cables were laid, each containing a single stranded conductor surrounded by a close spiral of very fine iron wire, a layer of insulation composed of a special compound of gutta percha, and a heavy non-insulated return copper conductor outside the gutta percha insulation. The outside of the cables consist of heavy, steel or iron armor wires, designed to have the requisite mechanical strength. In order that a sufficiently high overall efficiency shall be obtained, the cables are provided at both ends with special amplifying apparatus. Arrangements are made for carrying on four duplex telegraph conversations over each cable, simultaneously with the telephone conversation. The makeup of the cables is indicated in Fig. 2 which shows the differences in construction for shallow and for deep water.

The results which can be obtained with the arrangements which have been developed for long distance telephony are illustrated by a conversation over a distance of 5,600 miles, which was demonstrated in connection with the establishment of service between the United States and Cuba. This talk was from Havana to Santa Catalina Island off the Pacific Coast, and the circuit included the cables between Key West and Havana, and high efficiency overhead wires up the coast from Key West to New York, across the continent to San Francisco and down the Pacific

TELEPHONE

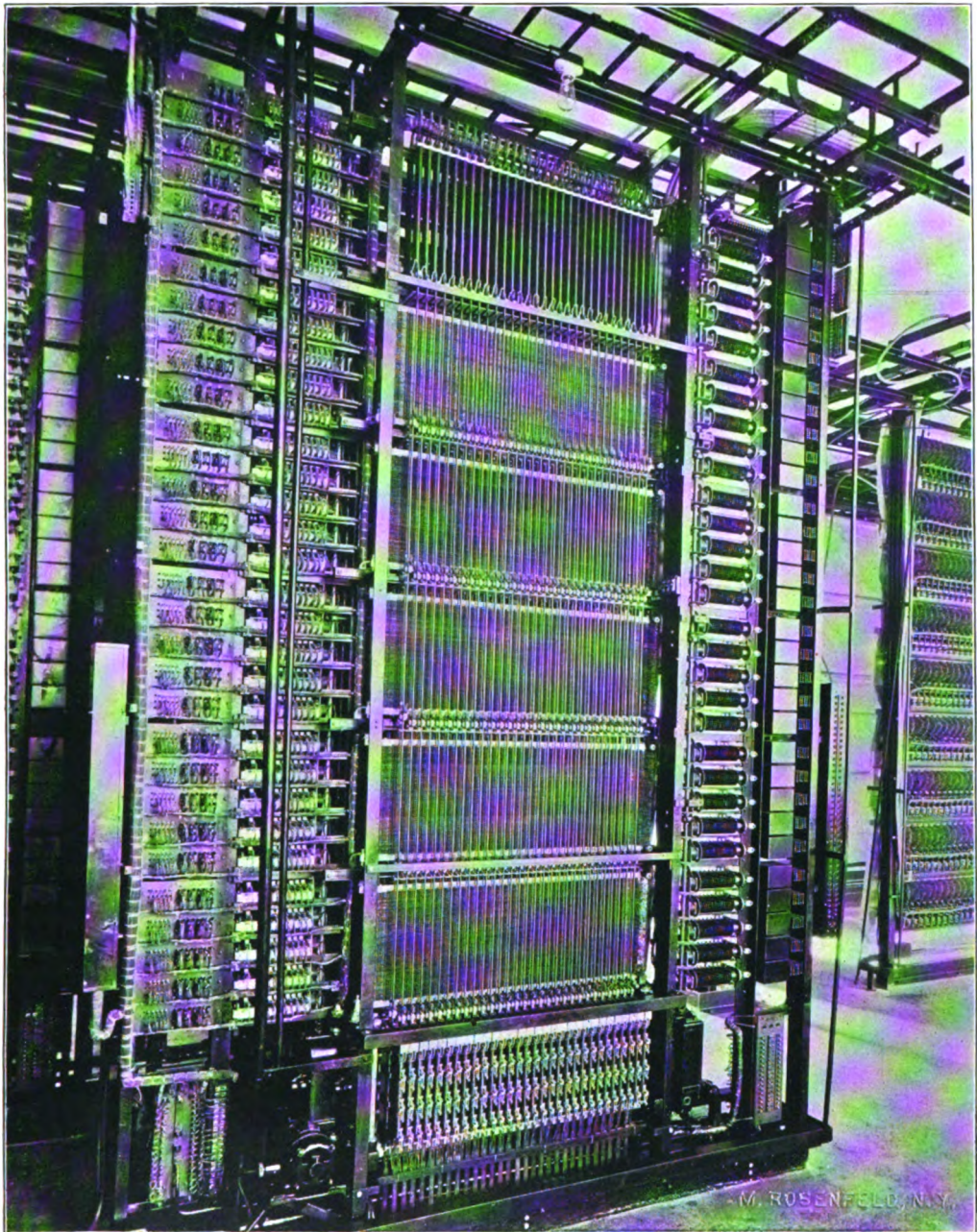


Fig 1. Selector Frame, Panel Type Machine Switching Apparatus

10

Coast to Los Angeles. This talk was completed through the radio telephone link from Los Angeles to Santa Catalina Island, which is operated regularly as a part of the commercial telephone system for providing telephone connection between those two points. It is interesting to note that if speech were to be transmitted over an equal distance by acoustic means through the air, seven hours would be required for its transmission, whereas over the electric telephone cir-

cuit, the transmission required less than one-tenth of a second.

Multiplex telephony by the use of carrier current systems has had a considerable application, there being now in commercial service, the equivalent of over 16,000 circuit miles. In one system, the frequencies of the carrier currents used to transmit the telephone conversations are 10,000, 15,000, 20,000 and 25,000 cycles; in another system they are 6,000, 9,000, 12,000, 15,-

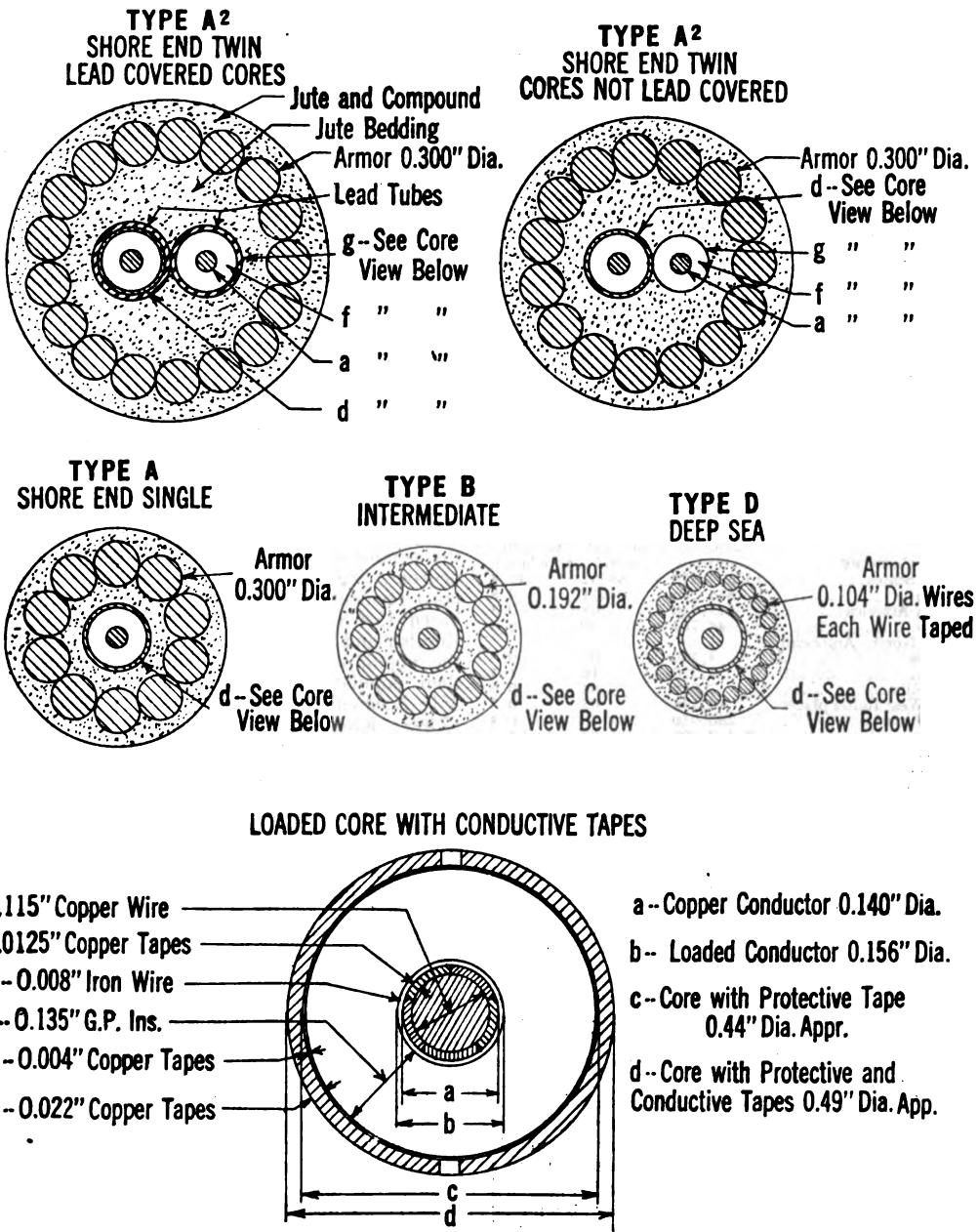


FIGURE 2.

000, 18,000 and 21,000. In some cases, the same frequency is used for transmitting in opposite directions; in others, different frequencies are used.

Supplementing the statistics given in 'The Americana' article, the following are the statistics regarding the number of telephone stations in the United States:

TELEPHONE DEVELOPMENT IN UNITED STATES
1 JAN. 1923.

Bell owned telephones.....	9,514,813
Bell connected telephones.....	4,535,752
Independent telephones.....	445,288
Total telephones.....	14,495,853
Total population.....	110,661,000
Total telephones per 100 population.....	13.1
Total Bell stations.....	14,050,565

The following tables give the telephone development of the world by countries, as of 1 Jan. 1921:

TELEPHONE WIRE MILEAGE OF THE WORLD
1 JAN. 1921.

COUNTRY	Miles of wire	Per cent of total
United States.....	32,000,000	60.77
Canada.....	2,105,101	4.00
Europe.....	14,730,273	27.97
All other countries.....	3,826,798	7.26
Total.....	52,662,172	100.00

NUMBER OF TELEPHONE STATIONS IN THE WORLD
1 JAN. 1921.

COUNTRY	Number of stations	Per cent of total world	Stations per 100 population
United States.....	13,329,379	63.92	12.4
Canada.....	856,266	4.11	9.8
Central America.....	15,950	.08	0.3
Mexico.....	44,784	.21	0.3
Other North American places.....	3,200	.02	0.8
Cuba.....	34,376	.16	1.1
Porto Rico.....	7,970	.04	0.6
Other West Indies places.....	10,138	.05	0.2
South America.....	286,950	1.38	0.4
Europe.....	5,289,606	25.37	1.2
Asia.....	493,645	2.37	0.1
Africa.....	102,206	.49	0.1
Oceania.....	376,080	1.80	0.6
Total.....	20,850,550	100.00	1.2

Telephone apparatus, known as the loud speaking telephone, has been perfected which gives a very large volume of sound and which practically removes the physical limitations on the size of audience which a man may address. The telephonic public address system consists of a special transmitter very free from distorting effects, an amplifier to greatly increase the telephonic energy and a group of loud speaking telephones provided with suitable horns. The horns may be placed directly over the speaker and the transmitter inconspicuously in front of him. By means of apparatus of this sort, President Harding at the time of his inauguration addressed 125,000 people. The telephone currents of the public address system can be transmitted to distant points over selected wire telephone circuits by the use of special arrangements and used there to operate loud speaking telephones.

A striking example of use of this sort is given by the ceremonies on Armistice Day, 1921, which were made audible by means of loud speaking telephones locally installed to about 100,000 people in Arlington, Va., and by connection over wire circuits to loud speaking telephones in distant cities, were heard by 35,000 people in New York City and 20,000 people in San Francisco.

BANCROFT GHERARDI,
Vice-President and Chief Engineer, American Telephone and Telegraph Company.

HAROLD S. OSBORNE,
Transmission Engineer, American Telephone and Telegraph Company.

TELEPHONY AND TELEGRAPHY.
Wireless. See RADIO TELEPHONY AND TELEGRAPHY.

TELLURIUM. See CHEMICAL MANUFACTURING.

TEMPLE UNIVERSITY, a non-sectarian co-educational institution, founded in 1884 and located at Philadelphia, Pa. In 1922-23 it had a faculty of 408 members, 8,042 students, property valued at \$760,683.92, and an income of \$734,950.23. Russell H. Conwell, D.D., LL.D., is president.

TENNESSEE, an east south-central State, bounded north by Kentucky and Virginia, east by North Carolina, south by Mississippi, Alabama, Georgia and North Carolina, and west by Arkansas and Missouri. The area of the State is 42,022 square miles and in 1920 its population was 2,337,885. The State is 34th in order of size and 19th in order of population. In 1920 the population included 1,885,993 whites, 451,758 negroes, 78 Asiatics and 56 Indians. Foreign-born residents in the State the same year numbered 15,478 and included 2,159 Germans, 1,665 English and 1,295 Irish. About three-fourths of the population is rural. The chief cities, with their populations in 1920, are: Memphis, 162,351; Nashville, the capital, 118,342; Chattanooga, 57,895; Knoxville, 77,818; Jackson, 18,860 and Johnson City, 12,442.

Religion.—The principal Christian denominations have a combined membership of 840,133. Of these, 320,442 are Baptists, 286,143 are Methodists, 71,821 are Presbyterians, 23,015 are Roman Catholics, 9,910 Episcopalians and 2,185 Congregationalists.

Education.—Primary education is free and compulsory throughout the State and the employment of children under 14 years of age in factories, workshops or mines is illegal. The State maintains separate schools for white and for colored children. There are 7,313 primary schools with 591,346 pupils and 12,947 teachers. In addition there are two public normal schools with 914 students preparing for teaching in elementary schools. There are 226 high schools with 30,534 pupils and 1,396 teachers. For higher education there are in the State 26 universities and colleges, the chief of which are the University of Chattanooga, State University of Tennessee, Fisk University, Vanderbilt University, Cumberland University and the University of the South. In addition there are seven colleges for women, a manual training school,

eight commercial schools and three universities for colored students.

Finances.—At the beginning of the last fiscal year there was on hand in the State treasury a balance of \$2,780,100.78. Receipts during the year amounted to \$15,806,492.22. Disbursements for the same period amounted to \$13,709,657.48, leaving a balance on hand at the beginning of the current fiscal year amounting to \$4,876,935.52. The bonded debt of the State in 1922 was \$15,623,000. The assessed value of real property was \$1,561,680,185.14; of personal property, \$166,187,195.

Agriculture.—The Federal Census of 1920 reported 252,774 farms, having a total acreage of 19,510,836 acres, of which 11,185,302 acres was improved land. The same year the value of all farm property was \$1,251,964,585. The chief crops, with their acreage, yield and value, for the year 1922 were: corn, 3,280,000 acres, 75,440,000 bushels, \$59,598,000; winter wheat, 472,000 acres, 4,484,000 bushels, \$5,515,000; barley, 14,000 acres, 315,000 bushels, \$252,000; clover seed, 5,000 acres, 9,000 bushels, \$99,000; oats, 229,000 acres, 4,351,000 bushels, \$2,306,000; buckwheat, 3,000 acres, 44,000 bushels, \$35,000; rye, 20,000 acres, 180,000 bushels, \$214,000; hay, 1,382,000 acres, 1,866 tons, \$30,602,000; sorghum sirup, 35,000 acres, 2,940,000 gallons, \$2,293,000; potatoes, 32,000 acres, 2,560,000 bushels, \$2,816,000; sweet potatoes, 44,000 acres, 4,180,000 bushels, \$3,260,000; cotton, 1,007,000 acres, 400,000 bales, \$49,000,000; tobacco, 130,000 acres, 94,250,000 pounds, \$20,735,000; peanuts, 13,000 acres, 9,100,000 pounds, \$410,000; apples, 4,250,000 bushels; peaches, 2,002,000 bushels, and pears, 180,000 bushels. There are about 27,300 square miles of wooded land within the State. Within recent years stock raising has diminished. On 1 Jan. 1923 there were in the State 309,000 horses, valued at \$22,557,000; 343,000 mules, valued at \$28,812,000; 495,000 milk cows, valued at \$16,830,000; 627,000 other cattle, valued at \$9,844,000; 340,000 sheep, valued at \$1,870,000, and 1,654,000 swine, valued at \$15,382,000.

Mining and Manufactures.—The chief mineral product of the State is coal, of which 4,600,000 tons were mined in 1922. Coal fields occupy a total area of about 4,400 square miles. Other minerals worked are pig iron, copper, zinc, oil, manganese, marble and limestone. In 1922, 25,709 tons of iron ore were produced and 25,219 tons were shipped. The 1922 petroleum output was 9,800 barrels. The chief manufacturing industries are iron and steel making, flour milling, lumbering, cotton by-products, tanning and the manufacturing and curing of tobacco. The last census showed 4,589 industrial establishments, capitalized at \$410,203,000, employing 113,000 persons and producing goods valued at \$556,253,162. Woolen goods, automobiles, furniture, cotton textiles and farm implements are new and flourishing industries.

Communications.—The State has a steam railroad mileage of 4,078 miles and 454 miles of electric railways. The Mississippi and Tennessee Rivers are natural waterways for considerable commerce.

Legal Holidays.—New Year's Day; 19 January (Lee's Birthday); 12 February; 22 February; Good Friday; Memorial Day (30

May); Confederate Memorial Day (3 June); 4 July; Forrest's Birthday (13 July); Labor Day; General Election Day; Thanksgiving Day; Christmas Day.

Charities and Corrections.—The chief institutions with their locations are: Tennessee Girls Vocational School, Tullahoma; Eastern Hospital for the Insane, Knoxville; Central Hospital for the Insane, Nashville; Western Hospital for the Insane, Bolivar; Home for Confederate Veterans, Hermitage; Main Prison, Nashville, and Brushy Mountain Prison, Petros.

Government.—The State executive is a Governor, elected for two years and who receives a salary of \$4,000. The legislature, known as the General Assembly, comprises a Senate of 33 members, elected for two years, and a House of Representatives of 99 members, elected for two years. No clergyman of any denomination is eligible for membership in either House. For local administration the State is divided into 96 counties. The legislature meets the first Monday in January of odd years.

Officials.—(1922) Governor, A. A. Taylor; Secretary of State, E. N. Haston; Attorney-General, Frank M. Thompson; Auditor, Tim W. Wade; Comptroller, John B. Thomason; Treasurer, Hill McAllister, and Superintendent of Education, John B. Brown. The officials entering office in 1923 are: Governor, Austin Peay; Speaker of Senate, Eugene Bryan; Secretary of State, E. N. Haston; Attorney-General, F. M. Thompson; Comptroller, J. B. Thomason; Treasurer, Hill McAllister, and Superintendent of Education, J. B. Brown.

Judiciary.—Members of Supreme Court: D. L. Lansden, Chief Justice; N. L. Bachman, C. P. McKinney, F. S. Hall and Grafton Green, Associate Justices.

TENNESSEE, University of, a State co-educational institution founded 1794 and located at Knoxville, Tenn. In 1922-23 it had a faculty of 247 regular members, a student enrollment of 1,655 regular—3,066 including short course and summer session. Property valued at \$2,840,000 and an income of \$600,000 from all sources. President, H. A. Morgan, LL.D.

TENNIS. See SPORTS.

TERHUNE, Mary Virginia ("MARION HARLAND"), American novelist and writer on domestic science: b. Amelia County, Virginia, 31 Dec. 1831; d. New York City, 2 June 1922. She was a daughter of Samuel Pierce Hawes and was educated under tutors, governesses, and in private schools. She began writing for the press at the age of 14 years and was but 22 years old when her first novel, 'Alone,' a pronounced success, was published. On 2 Sept. 1856 she was married to the late Rev. Edward Payson Terhune and went to live at Charlotte Court House, Va. She had a genius for home-making and her experiences as a housekeeper soon taught her that existing books on cookery and household management were not only badly written but were also impractical. The result was that she went to a well-known publishing house with a manuscript for a book on domestic science which bore neither of these defects. Under the title 'Common Sense in the Household' the

book was published and within 10 years 100,000 copies were sold. Mrs. Terhune was vice-president of the Association for the Preservation of Virginia Antiquities; vice-president of the Pocahontas Memorial Association; a member of the Virginia Historical Society, and a member also of the Society of American Authors. She was a frequent contributor to magazines and newspapers, for two years conducted *Babyhood*, thereafter conducted *The Home-Maker* and departments in *Wide-Awake* and *Saint Nicholas*, and for a time was on the staff of the *Chicago Tribune*. Mrs. Terhune collaborated with her daughter, Christine Terhune Herrick, in writing 'The National Cook Book,' 'Breakfast, Lunch and Tea,' and 'The Helping Hand'; with her daughter, Virginia Terhune Van de Water, in writing 'Everyday Etiquette,' and with her son, Albert Payson Terhune, in writing 'Dr. Dale—A Story Without a Moral' (1900). In addition to the books written in collaboration with her children, Mrs. Terhune published 'The Story of Mary Washington'; 'Alone'; 'Moss-Side'; 'The Hidden Path'; 'Common Sense in the Household'; 'Common Sense in the Nursery'; 'The Cottage Kitchen'; 'The Dinner Year Book'; 'Loitering in Pleasant Paths'; 'Old Field School-Girl'; 'Judith'; 'Handicapped'; 'Nemesis'; 'At Last'; 'Helen Gardiner's Wedding Day'; 'Jessamine'; 'With the Best Intentions'; 'True as Steel'; 'Sunnybank'; 'From My Youth Up'; 'My Little Love'; 'A Gallant Fight'; 'The Royal Road'; 'His Great Self'; 'Mr. Wayt's Wife's Sister'; 'Eve's Daughters'; 'When Grandmamma Was New'; 'Some Colonial Homesteads'; 'More Colonial Homesteads' (1899); 'Where Ghosts Walk'; 'Literary Hearthstones'; 'Marion Harland's Complete Cook Book'; 'When Grandmamma Was Fourteen' (1905); 'The Distractions of Martha' (1906); 'Where Ghosts Walk' (Second series, 1910); 'Marion Harland's Autobiography' (1911); American edition 'Reader's Handbook'; 'A Long Lane—A Chronicle of Old New Jersey'; 'The Carringtons of High Hill, An Old Virginia Chronicle.'

TEXAS, a west south-central State, popularly known as the Lone Star State, bounded north by New Mexico and Oklahoma, east by Oklahoma, Louisiana and the Gulf of Mexico, south by the Gulf of Mexico and Mexico, and west by Mexico and New Mexico. It is the largest State of the North American Union, having an area of 265,896 square miles. In 1920 it ranked fifth in population with 4,663,228. The population of 1920 included 3,918,165 whites, 741,694 negroes, 2,109 Indians and 1,260 Asiatics. The foreign-born residents of the State the same year numbered 360,519, of whom 249,652 were Mexicans, 31,062 Germans, 26,441 Austrians and 7,685 English. The chief cities, with their populations in 1920, are: Houston, 138,276; San Antonio, 161,379; Dallas, 158,976; Fort Worth, 106,482; El Paso, 77,560; Waco, 38,500; Beaumont, 40,422; Galveston, 44,255; Wichita Falls, 40,079; Austin, the capital, 34,876; Port Arthur, 22,251 and Denison, 17,065.

Religion.—The principal Christian denominations have a combined membership of 1,784,620, of whom 646,494 are Baptists, 418,121

Methodists, 402,874 Roman Catholics, 68,229 Presbyterians, 19,187 Lutherans, 17,116 Episcopalians, and 2,377 Congregationalists.

Education.—The State supplies separate schools for white and for colored children. There are 8,401 elementary schools with 28,350 teachers and 1,297,991 pupils, and 2,621 high schools with 4,766 teachers and 107,779 pupils. For the training of elementary teachers there are six normal schools. For higher education there are several institutions, the principal of which are the State University of Texas, the State Agricultural and Mechanical College, the College of Industrial Arts, Denton; Baylor University, Waco; Texas Christian University, Southern Methodist University, Howard Payne University, Southwestern University, Austin College, Texas Women's College, the University of Dallas, Daniel Baker College and Rice Institute.

Finances.—At the beginning of the last fiscal year the State treasury had on hand a balance of \$5,610,865.36. Receipts during the fiscal year amounted to \$58,559,142.89. Disbursements for the same period totaled \$61,367,872.32, leaving a balance on hand at the beginning of the current fiscal year amounting to \$2,802,135.93. The bonded debt of the State in 1922 was \$4,002,200. The assessed value of all property was \$3,350,000,000.

Agriculture.—Texas is one of the great agricultural States of the Union. The last Federal census reported 436,033 farms with a combined area of 113,518,716 acres, of which 32,377,929 acres was improved land. The total value of all farm property in 1920 was \$4,461,579,497. Irrigation is being increased by various projects. There are almost 3,000,000 acres of irrigable lands in the State, of which less than 1,000,000 are actually irrigated. In all lines of agriculture Texas is a heavy producer. It is the great cotton State. Other crops are rice, sorghums, sugarcane, fruits, tobacco, most of the cereals, forage crops, potatoes, etc. In 1920 Texas was the only State reporting a total value of all crops in excess of \$1,000,000,000. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 5,729,000 acres, 114,580,000 bushels, \$95,101,000; winter wheat, 1,249,000 acres, 9,992,000 bushels, \$10,991,000; oats, 1,455,000 acres, 33,465,000 bushels, \$18,406,000; rye, 13,000 acres, 117,000 bushels, \$146,000; broom corn, 12,000 acres, 2,200 tons, \$440,000; tame hay, 671,000 acres, 1,074,000 tons, \$12,351,000; sorghum sirup, 35,000 acres, 2,415,000 gallons, \$1,739,000; rice, 191,000 acres, 5,959,000 bushels, \$8,760,000; potatoes, 39,000 acres, 2,418,000 bushels, \$3,869,000; sweet potatoes, 105,000 acres, 8,715,000 bushels, \$7,408,000; cotton, 12,125,000 acres, 3,290,000 bales, \$386,575,000; peanuts 172,000 acres, 96,320,000 pounds, \$3,853,000; grain sorghums, 1,970,000 acres, 39,400,000 bushels, \$39,400,000; apples, 2,640,000 bushels; peaches, 1,920,000 bushels, and pears, 390,000 bushels. Livestock raising is an immense industry. The wool clip is about 20,000,000 pounds annually. The State leads the Union in the cattle breeding industry. On Jan. 1, 1923 there were in the State 971,000 horses, valued at \$51,463,000; 863,000 mules, valued at \$69,040,000; 1,052,000 milk cows, valued at \$37,872,000; 5,041,000 other cattle, valued at \$93,763,000; 2-

862,000 sheep, valued at \$14,882,000, and 2,326,000 swine, valued at \$20,469,000.

Mining and Minerals.—Texas is one of the great oil producing States. Oil is found from the northwest to the southeast on the Gulf and the Texan field appears to be part of the great Mexican oil field. The total petroleum output in 1922 was 116,670,000 barrels. Approximately 1,000,000 tons of coal were mined in 1922. Other products are quicksilver, natural gas, salt, cement, granite, limestone and sandstone, pottery clays, silver, lead and copper. Potash is a recent find in the northwestern part of the State.

Manufactures.—The last manufacturing census reported 5,724 industrial establishments in Texas, employing 130,911 persons and capitalized at \$585,776,451. These establishments paid in salaries and wages \$147,907,778, and used raw materials valued at \$701,170,898, and turned out goods valued at \$999,995,796, making the value added by manufacture \$298,824,898. The principal industries ranked by value of products are: oil refining, slaughtering, meat packing, oil and cake cottonseed, flour mill and grist mill products, lumber and timber products, cars and railroad shop repairs, foundry and machine shop products, bread and bakery products, printing and publishing newspapers and periodicals, ship building and body building, cleaning and polishing of rice, cotton goods, confectionery and ice cream, book printing and publishing, and manufactured ice.

Communications.—Galveston is one of the chief cotton ports of the United States and as a commercial port is second only to New York. Its foreign trade is about \$500,000,000 yearly. The State has 13,117 miles of steam railways, 1,241 miles of electric railways and 91 miles of gasoline railways. Houston is the most important railroad centre, 15 systems radiating there. The State has 1,047 miles of navigable waterways. The State has 5,122 miles of improved State highways, on which \$27,600,000 has been spent.

Legal Holidays.—New Year's Day; Washington's Birthday; 2 March, Texas Independence Day; 21 April, San Jacinto Day; Decoration Day; 3 June, Jefferson Davis's Birthday; 4 July; Labor Day; 12 October, Columbus Day; Armistice Day; Thanksgiving Day, and Christmas Day.

Charities and Corrections.—The chief institutions in the State with their locations and number of inmates in 1922 are: Confederate Home (Men), Austin, 372; Confederate Woman's Home, Austin, 90; State Orphans' Home, Corsicana, 483; Girls' Training School, Gainesville, 72; Juvenile Training School, Gatesville, 1,186; Feeble Minded Colony, Austin, 243; E. Texas Hospital for Insane, Rusk, 771; N. Texas Hospital for Insane, Terrell, 2,197; S. W. Insane Asylum, San Antonio, 2,279; State Lunatic Asylum, Austin, 1,959; State Epileptic Colony, Abilene, 700; American Legion Memorial Sanatorium, Kerrville, 58, (Incomplete, will have capacity of 600 beds); Tuberculosis Sanatorium, Carlsbad, 317; Texas School for the Blind, Austin, 227; Texas School for the Deaf, Austin, 474; Deaf, Dumb and Blind for Colored, Austin, 168; N. W. Texas Insane Asylum, Wichita Falls, 211, (New Institution); Home for De-

pendent and Neglected Children, Waco, (New, not yet open), and State Hospital for Crippled Children, located in connection with John Sealy Hospital at Galveston and partially maintained by the State, with a patient population of about 15 children.

Government.—The executive is a Governor, elected for two years, who receives a salary of \$4,000. The legislature consists of two chambers, the Senate of 31 members, elected for four years, and a House of Representatives of 150 members, elected for two years. Texas sends two Senators and 18 Representatives to the Federal Congress. For local administration the State is divided into 253 counties. The legislature meets biennially in January of odd years.

Officials.—The State officials in 1922 were: Governor, Pat M. Neff; Lieutenant-Governor, Lynch Davidson; Secretary of State, S. L. Staples; Attorney-General, W. A. Keeling; Comptroller, Lon A. Smith; Treasurer, C. V. Terrell, and Superintendent of Education, Annie Webb Blanton. The State officials in 1923 are: Governor, Pat M. Neff; Lieutenant-Governor, T. W. Davidson; Secretary of State, S. L. Staples; Attorney-General, W. A. Keeling; Comptroller, Lon A. Smith; Treasurer, C. V. Terrell, and Superintendent of Education, S. M. N. Maes.

Judiciary.—Members of Supreme Court: C. M. Cureton, Chief Justice; Wm. Pierson and T. B. Greenwood, Associate Justices.

TEXAS AGRICULTURAL AND MECHANICAL COLLEGE, a State educational institution for men, founded in 1876 and located at College Station, Texas. In 1922-23 it had a faculty of 155 members, 2,000 students, property valued at \$4,000,000 and an income of \$1,200,000. William B. Bizzell, LL.D., is president.

TEXAS FEVER. See VETERINARY MEDICINE AND SURGERY.

TEXAS PRESBYTERIAN COLLEGE, a Southern Presbyterian educational institution for women, founded in 1902 and located at Milford, Texas. In 1922-23 it had a faculty of 25 members, 145 students, property valued at \$450,000 and an income of \$57,000. French W. Thompson, D.D., is president.

TEXAS, University of, a State co-educational institution, founded in 1881 and located at Austin, Texas. In 1922-23 it had a faculty of 260 members, 5,000 students, property valued at \$5,650,000 and an income of \$1,875,000. Robert Ernest Vinson, D.D., LL.D., is president.

TEXAS WOMAN'S COLLEGE, an educational institution for women, under the auspices of the Methodist Episcopal Church, South; founded in 1914 and located at Fort Worth, Texas. In 1922-23 it had a faculty of 35 members, 400 students, property valued at \$900,000 and an income of \$150,000. Henry Elbert Stout, Ph.B., is president.

TEXTILE MACHINERY, Manufacture of. According to a report issued by the Department of Commerce on 24 Jan. 1923, 416 establishments engaged chiefly in the manufacture of textile machinery in the United States in 1921 turned out products valued at \$128,820,000, as compared with products valued at \$122,089,000 turned out by 391 establishments in 1919. In ad-

dition, establishments engaged primarily in the manufacture of other articles reported textile machinery of a value of \$3,612,000 in 1919. Corresponding figures for 1922 were not available, it was stated, at the time the report was issued. Persons engaged in the industry, including proprietors, firm members, salaried employees and wage earners, numbered 34,739 in 1921 and 36,126 in 1919. Salaries and wages paid out in 1921 amounted to \$47,298,000, and \$44,627,000 in 1919. Materials used cost \$44,849,000 in 1921, compared with \$45,637,000 in 1919. Of the 450 establishments which reported products valued at \$5,000 or more in 1921, 127 were located in Massachusetts, 67 in Pennsylvania, 55 in New Jersey, 52 in Rhode Island, 29 in New York, 16 in Connecticut, 14 in North Carolina, 12 in Georgia, eight each in New Hampshire and Vermont, six each in Maine and South Carolina, four in Alabama, two each in Delaware, Illinois and Iowa and one each in Indiana, Kentucky, Maryland, Michigan, Ohio and Tennessee.

TEXTILES. Somewhat better conditions prevailed in the textile industries of the United States in the opening months of 1923 than existed during the depressing year of 1921. The great cotton and woolen mills of New England have had to deal with a serious strike situation, with agitation over the 48 or 54 hour week. The slump in the pound price of cotton from 35.9 cents in 1920 to 11.5 cents in 1921, ruined many, and gravely affected the entire textile industries of the world. The fall of wool from 53.3 cents in 1920 to 19.6 cents in 1921 was almost as depressing. The cotton situation is fully described under Cotton. The article on clothing also contains facts bearing on the general situation. See also SILK AND WOOL.

The Department of Commerce gathered some figures of the industry, in 1921, which are given below, as the latest complete and authoritative, yet to be considered in light of the fact that all these minor activities in the textile industry are known to have much improved since the census was completed. The woolen and worsted report for 1921 covered 814 establishments, employing 171,600 persons, paying salaries and wages totaling \$201,243,000, using materials valued at \$400,046,000, with a total production of \$755,884,000, less than three-fourths the \$1,065,434,000 production of 1919. Of this production \$230,945,000 was woolen goods, and \$524,639,000 worsted goods. In carpets and rugs 70 establishments were reported in 1921, employing 23,418 persons, paying salaries and wages of \$34,472,000, using materials valued at \$47,842,000, and turning out products valued at \$101,358,000, against \$123,254,000 in 1919. In dyeing and finishing, the 593 establishments reporting as operating outside the great textile mills in 1921, gave employment to 54,000 persons, paid salaries and wages totaling \$72,690,000, and yielded products valued at \$272,837,000, as compared with \$323,968,000 in 1919. Jute production fell off from \$34,443,000 to \$17,506,000 during the same period. The minor industry of cotton lace making fell off from \$16,321,000 to \$14,559,000, in the same two years; while wool scouring reduced its production from \$13,680,000, to \$6,520,000. The only minor industry dependent on textiles that scored a gain in these two years was textile machinery manu-

facture. Evidently many of the mills used the dull season to improve their plants. See TEXTILE MACHINERY, MANUFACTURE OF.

An indication of the improvement in the textile industry as a whole is shown in the consumption of grease wool. The year 1921 started with only 30,000,000 pounds a month, rose to 53,000,000 in April, and 62,000,000 in September. January, 1922, started with 62,000,000, rose to 71,000,000 in March, fell off to 53,000,000 in April, and thereafter rose almost steadily to 77,600,000 in November, 1922. Sheep-raising is a declining industry in the United States, and of course we have less wool. See Wool.

There is a decided tendency of cotton mills to move southward, where they are nearer to the cotton supply, where labor is cheap, and the workers willing to put in more hours than is customary in New England. Early in 1923 it was reported that \$40,000,000 was being expended in new cotton mill construction in the two Carolinas alone, mostly with Northern capital. This means about 575,000 new spindles and 12,000 new looms.

With a tariff of 31 cents a pound on raw wool, and with high protection on nearly all articles manufactured into fabrics, the textile industries of the United States are expected to maintain prices that will make the various branches of the trade profitable for some years to come. As in other trades there is tendency toward standardization of sizes and grades of fabrics, with simplification and reduced cost. Textiles of all kinds imported into the United States in 1922 had a value of \$857,136,787, as compared with \$673,540,000 in 1921. Raw silk imports alone were valued at \$365,787,400 in 1922 against \$259,054,000 in 1921.

TEXTILE STRIKE. See STRIKES AND LOCK-OUTS.

THIEL COLLEGE, a co-educational institution under the auspices of the Evangelical Lutheran Church, founded in 1870 and located at Greenville, Pa. In 1922-23 it had a faculty of 22 members, 320 students, property valued at \$350,000 and an income of \$60,000. Carl A. Sundberg is president.

THURINGIA (officially Einheitsstaat Thuringen), a federal state of the Republic of Germany, comprising the republics of Saxe-Weimar-Eisenach, area, 1,397 square miles; pop. 270,015; Saxe-Meiningen, area, 953 square miles; pop. 191,491; Gotha, area, 548 square miles; pop. 433,959; Saxe-Altenburg, area, 511 square miles; pop. 211,638. Reuss, area, 441 square miles; pop. 212,007; Schwarzburg-Rudolstadt, area, 363 square miles; pop. 99,339; Schwarzburg-Sonderhausen, area, 333 square miles; pop. 93,427. Total area, 4,546 square miles and pop. 1,511,876. Weimar, the capital, has 37,237 inhabitants. See GERMANY.

THYSSEN, August, German manufacturer and capitalist; b. 1842. He is often referred to as the "king" of the Ruhr Valley in the Rhineland, occupied (January 1923) by French troops. Born only three years later, Thyssen was thus a contemporary of John D. Rockefeller, whom, in many ways, he resembles. The two men are deeply religious, Rockefeller being a Baptist and Thyssen a Roman Catholic, whom the Pope has

decorated. Both men are socially democratic, Thyssen refusing all honors from the Kaiser. Both men are simple and even parsimonious in their personal tastes, Thyssen using an automobile made in the year 1909, and wearing the cheapest clothes. Both men have exhibited a passion for organizing business along the lines of what has come to be called "the vertical trust" namely, a management which takes the raw material and carries the processes of manufacture and distribution right through to the ultimate consumer, so eliminating the middleman and all preventable waste.

In the sixties, while Rockefeller was dealing with oil, Thyssen started his first rolling mill at Hamborn, with 60 men and a capital of \$6,000. His great Deutsche Kaiser Works, there situated, now employ 26,000 men, and in his mines and plants as a whole, 66,000 men are normally employed.

In 1914, Thyssen owned coal and iron mines, furnaces, plants, warehouses, ships, barges and docks, with salt and potash fields, not only in the Rhineland, but at Caen, in Normandy, at the French towns of Montegnny and Maisières, at the Russian port of Nikoleieff on the Black Sea, at Buenos Aires, in India and the British Dominions. Among Germans, his only rival in wealth has been Stinnes. What exactly Thyssen is worth cannot be stated, first owing to the vagaries of the German mark and secondly, because, like Henry Ford, he reinvested his profits in his various enterprises, financing them by bonds, which remained under his personal control. During the troubles with the French, he indignantly refused to sell them a 60 per cent interest in his ventures. While the war cost him the ownership of many foreign properties, he made profits out of the manufacture of munitions, including big guns, and at the armistice, he transformed his new armament works into plants for manufacturing electrical machinery. He has also been busy opening new coal mines to take the place of those in the Saar Valley which are held by France.

Whether Thyssen wanted the war is very doubtful. He was one of the big industrialists who had to be talked over by the Kaiser. His method was conquest by purchase rather than by military force, a good example of which was his attempt in July 1914 thus to acquire the Dutch port of Naar Dingen near Rotterdam for his Vulcan Iron Works. When, however, war was raging, Thyssen, like the rest, was out for whatever could be won from France, himself urging that Nancy, Longwy and ample territories around them be annexed. It cannot be argued that the French are doing anything to him that he would not have done to them.

Short, squarely-built and thicknecked, Thyssen somewhat resembles Carnegie in physique. Castle Landberg, where he lives, is a gothic edifice, adorned with statues by Rodin of whom Thyssen was one of the earlier and most generous patrons. Adjoining his bedroom is an office where he works; and in another and still dingy office at his steel plant, he toils incessantly. Travelling second class and economizing on tips, he wishes to die in harness, his motto being: "If I rest, I rust." While he runs his business on three eight-hour shifts a day, he thinks that

an eight hour day is too short. For the Communists who, in December 1918, arrested him for high treason, he has no use; and if the French keep them in order, it will be a blessing, he thinks, in disguise. Indeed, his complaint of the French is not so much that they are French as that they fail to be, in his opinion, scientific industrialists. His claim is that the French made a loss in the Saar Valley until they summoned German engineers to their assistance.

Thyssen's domestic life has been unhappy. He and his wife are divorced and over the settlement of the property on the children, there was a lawsuit, extending for 10 years and costing a fabulous sum in fees. What aggravated the quarrel was the conduct of Thyssen's second son, August, Jr., who spent freely in Berlin on the strength of his father's fortune and attempted to set up in businesses that would compete with his father. Fritz, the eldest son, is associated with his father in the Ruhr and was arrested by the French and fined when he declined to authorize shipments of coal into France.

TIBET, a dependency of China extending from the Pamir region eastwards to the Chinese frontier. Its area is estimated at 463,200 square miles with a population of from 1,500,000 to 6,000,000. A census, the only one ever taken, of 1737 showed 316,300 lamas or monks and 635,950 laity. Lhasa, the capital, has about 20,000 inhabitants. Agriculture is carried on in some places, cereals and vegetables being grown but Tibet is mainly a pastoral country, the domestic animals being sheep, yak, a kind of cattle, buffalo, camels and pigs. Wool spinning and knitting are carried on. Gold, borax, and salt deposits are worked. There is a large trade with China and India. In 1921 imports to India amounted to £313,400 and Indian exports to Tibet to £613,200. After the establishment of the Chinese Republic in 1911 the Tibetans expelled the Chinese garrison and Great Britain was later instrumental in preventing China from re-establishing her authority there. At present only the suzerainty of China is recognized.

TIGERT, John James, American educator: b. Nashville, Tenn., 11 Feb. 1882. His father was the late Bishop John James Tigert of the Methodist Episcopal Church, South, and his mother, prior to her marriage, was Miss Amelia McTyeire. He was graduated from Vanderbilt University in 1904 with the degree of B.A., and from the Honor School of Jurisprudence, Oxford University, England, with the same degree in 1907, being the first Rhodes scholar from Tennessee to be graduated from Oxford. In 1915 he took the degree of A.M. at Oxford. In 1916 he attended the Graduate School of the University of Minnesota and in 1921 the degree of LL.D. was conferred upon him by the University of Kentucky. He was professor of philosophy at Central College, Mo., 1907-09; president of Kentucky-Wesleyan College, Winchester, Ky., 1909-11; professor of philosophy, 1911-17, and thereafter professor of psychology, at the University of Kentucky until 1921 when he was appointed United States Commissioner of Education. From June 1918 until July 1919, he was engaged in Y. M. C. A. work with the American Expeditionary Forces; was a member of the Army Educational Corps from April to

July and extension lecturer at the A. E. F. University, Beaune, France. On 25 Aug. 1909 he married Miss Edith Jackson Bristol, a daughter of M. C. Bristol of Chicago. He has published 'The Philosophy of the World War'; also many addresses and articles on education. He is a member of the Federal Board for Vocational Education. He is a member of the council of the National Educational Association, a member of the American Association for the Advancement of Science, and of the Phi Beta Kappa, Phi Delta Theta, and Alpha Delta Sigma Greek letter fraternities.

TIN. The production of tin metal in the United States is negligible. Great effort has been expended to find a local supply, but wherever located the quantity has been too small to be profitably worked. In 1920 the total mined was 22 tons, valued at \$22,000, and in 1921 four tons only were obtained, of the value of \$2,400. It was reported early in 1923 that a new source of tin ore had been found in New Mexico, but its possibilities are not yet apparent. The tin needed for American industries is imported, about two-thirds from the Straits Settlements, the remainder from Banka and Billiton, Bolivia, etc. Much of it comes in blocks and pigs, but Bolivia sends concentrates. The importation for 1922, partly estimated, was: tin ore, value \$6,000,000, about 2 per cent less than for 1921; tin blocks and pigs, 127,325,000 pounds, valued at \$38,950,000, or nearly three times the importation of 1920. The visible supply of tin has increased, the latest estimate being at the close of 1922:

VISIBLE TIN SUPPLY	Long tons	
	1922	1921
Straits Settlements.....	62,903	36,107
Australia.....	1,420	1,175
Banka and Billiton.....	16,099	11,874
Standard.....	11,481	10,537
	<u>91,903</u>	<u>59,693</u>

In addition there is believed to be an "invisible supply" of about 19,000 tons in the Far East.

The tin ore that comes into the United States is refined, mainly at the American Smelting and Refining Company, Perth Amboy, N. J.; Williams Harvey Corporation, Brooklyn, N. Y.; and Richards & Company, Malden, Mass.

The manufacture of tin and terneplate and of tinware became a considerable industry in the United States through the assistance of the McKinley Tariff. In 1919 the tin and terneplate product was valued at nearly \$100,000,000, and the tinware product at \$300,000,000. The metal tin sold as low as 13 cents in 1896, and rose to 46 cents in 1912. In 1922 the 3 January opening price was 32.7 cents, the lowest figure was in March, 28.4 cents, and it closed 30 December at the highest figure of the year 39 cents. The exportation of American tin and terneplate is declining, being valued at \$7,950,000 in 1922, against \$17,415,000 in 1921. Japan and Canada are the largest buyers.

C. H. COCHRANE.

TOBACCO. There were, according to the United States Department of Agriculture, 1,324,840,000 pounds of tobacco produced in the United States during 1922. Production in 1921

amounted to 1,069,693,000 pounds and in 1920 to 1,582,225,000 pounds. The tobacco area in 1922 totaled 1,725,000 acres, as compared with 1,427,000 acres in 1921 and 1,960,000 acres in 1920. The farm value of the crop, based on 1 December prices, was \$306,179,000 in 1922, compared with \$212,728,000 in 1921, and \$335,675,000 in 1920. The per pound price of the 1922 crop varied from 47 cents for Florida-grown tobacco to 16 cents for some of the Pennsylvania crop. The average per pound price on 1 December for the whole country was 23.1 cents, compared with 19.9 cents in 1921 and 21.2 cents in 1920. Kentucky, as it has done for at least the last three years, led in production in 1922 with 446,250,000 pounds. Its 1921 crop amounted to 325,710,000 pounds and its 1920 crop to 476,000,000 pounds. North Carolina produced 306,940,000 pounds in 1922, 252,450,000 pounds in 1921 and 433,750,000 pounds in 1920. Virginia, grew 156,750,000 pounds in 1922, 91,850,000 pounds in 1921 and 179,580,000 pounds in 1920. Production in pounds in the other States in 1922, was as follows: Massachusetts, 11,925,000; Connecticut, 35,000,000; New York, 2,200,000; Pennsylvania, 56,760,000; Maryland, 26,950,000; West Virginia, 7,425,000; South Carolina, 57,600,000; Georgia, 5,940,000; Florida, 3,300,000; Ohio, 46,800,000; Indiana, 16,200,000; Wisconsin, 45,600,000; Missouri, 4,500,000; Tennessee, 94,250,000; Louisiana, 450,000.

Tobacco Manufacturing.—The total number of cigarettes produced in 1922 was 53,582,028,982, as compared with 50,899,048,366 in 1921 and 44,645,823,212 in 1920. Cigars produced in 1922 numbered 6,892,597,657, as compared with 6,758,630,824 in 1921 and 7,967,021,692 in 1920. Manufactured tobacco produced in 1922 totaled 382,070,512 pounds, as compared with 350,835,000 pounds in 1921 and 363,688,795 pounds in 1920. Snuff manufactured in 1922 amounted to 38,162,198 pounds, as compared with 35,661,435 pounds manufactured in 1921 and 36,126,387 pounds manufactured in 1920. According to figures made public by the Federal Bureau of Census in February, the leaf tobacco in the possession of manufacturers and dealers in the United States on 1 Jan. 1923 was 1,491,000,000 pounds. Chewing, smoking, snuff, and export types of tobacco constituted the bulk of the amount referred to, totaling slightly over 1,000,000,000 pounds. Cigar types of tobacco held by the manufacturers and dealers on 1 January amounted to 346,000,000 pounds, while imported tobaccos held by the dealers and manufacturers at that time amounted to 76,000,000 pounds. The above figures cover the holdings of dealers in and manufacturers of tobacco, other than original growers, who, according to the returns of the Commissioner of Internal Revenue, manufactured during the preceding calendar year more than 50,000 pounds of tobacco, 250,000 cigars or 1,000,000 cigarettes, and by dealers in or manufacturers of leaf tobacco, who, on an average, had more than 50,000 pounds of leaf tobacco in stock at the end of the four quarters of the preceding calendar year, and include also all the imported tobacco in the United States and bonded manufacturing warehouses.

Tobacco Exports.—Exports of leaf tobacco

from the United States in 1922 were 431,907,578 pounds, valued at \$145,984,896. This was a decrease of 83,445,489 pounds as compared with the amount of tobacco exported in 1921, and was the lowest amount exported from the United States in any year since 1918. Although this is a pronounced decrease from the figures for 1921 it is approximately 17,000,000 pounds more than the amount of tobacco exported in 1913. The exports of stems and scrap tobacco were 10,960,906 pounds, an increase of nearly 3,500,000 pounds over 1921. The number of cigarettes exported was 11,470,179,000, or approximately 3,000,000,000 more than were exported in 1921. There was also a slight increase in the number of cigars and cheroots exported. Exports of plug tobacco amounted to 3,797,038 pounds, as compared to 2,586,781 pounds in 1921. The exports of smoking tobacco decreased from 7,656,700 pounds in 1921 to 1,285,765 pounds in 1922.

Cuba's Crop.—According to reports to the United States Department of Commerce from Cuba, which produces most of the fine tobacco used in the manufacture of cigars, the 1922 crop of that country was about 50,000 bales short of the 1921 crop and 400,000 bales short of the 1920 crop. In the year last mentioned Cuba produced 700,000 bales of tobacco. In 1921 production dropped to 355,000 bales, while the latest estimates placed the 1922 crop at but 304,000 bales.

Late in the fall reports from Paraguay indicated a falling off in the tobacco crop of that country, which normally produces about 24,000,000 pounds. The 1921 crop amounted to 21,280,000 pounds.

Tobacco, Production and Consumption in Europe.—Based on official returns, the European tobacco crop of 1922 was estimated at 274,405,000 pounds as compared with the 1921 crop of 264,039,200 pounds. The production of Russia and Italy is not included in this estimate. Italy's production in 1921 was 43,116,688 pounds, and though there was increased planting, it was believed that the 1922 crop, owing to damage by drought, would not greatly exceed the crop of the year before. Bulgaria's crop was estimated at 44,593,532 pounds. Germany leads all countries in Europe in tobacco production with an estimated crop of 77,140,000 pounds in 1922 as compared with the 1921 crop of 65,961,312 pounds. Czechoslovakia's 1922 crop was estimated at 4,778,272 pounds; Hungary's at 4,383,756 pounds. The production of Turkish tobacco in the two districts of Samsun and Smyrna was estimated at 21,956,248 pounds, a considerable portion of which was destroyed by fire and by the retreating Greek army during their pursuit in Asia Minor by the Turks. Consumption of tobacco throughout Europe still shows a rising tendency with the probability of an increase in the imports of American tobacco by Italy and France. Despite the chaotic conditions which have obtained in Germany during the past three years, the imports of tobacco have increased from 179,405,600 pounds in 1913 to 250,154,000 pounds during the fiscal year which ended 3 April 1922. Figures given out in February 1923 by the French Tobacco Monopoly, in regard to its sales of tobacco in 1922 and 1921, show a large increase

in the popularity of all of the most expensive forms of tobacco. Sales in 1921 totaled 115,194,969 pounds as compared with 102,290,700 pounds in 1920.

TOBACCO INSECTS. See ENTOMOLOGY, UNITED STATES BUREAU OF.

TOBAGO. See TRINIDAD AND TOBAGO.

TOGOLAND, former colony of Germany in west Africa, lying between the Gold Coast Colony on the west and French Dahomey on the east. After the World War it was divided between Great Britain and France. The total area of Togoland, is 33,700 square miles with an estimated native population of 1,032,000 and 125 Europeans. The chief products are palm oil, palm kernels, cocoa, copra, and cotton; the chief imports consist of cotton goods, foodstuffs, salt and tobacco. Of the total area, 12,600 square miles were allotted to Great Britain. There are native industries, such as straw plaiting, weaving coarse fabrics, pottery, etc.

TOMATO WEEVIL. See ENTOMOLOGY, UNITED STATES BUREAU OF.

TONGA, or FRIENDLY ISLANDS, a British Protectorate consisting of three groups of islands—Tonga, Haabai, and Vavau and some neighboring islands—in the Pacific Ocean, between 15 and 23° 30' south Lat., and 173° and 177° west Long. The total area is about 385 square miles. The capital is Nukualofa. The population is 23,562, including 22,689 Tongans, 250 half castes, 247 other islanders and 376 Europeans. The natives are Christians, 16,000 Free Church, 4,000 Wesleyan Methodists and 3,000 Roman Catholics. Native products are confined almost entirely to copra, of which 10,992 tons were exported in 1920. Foodstuffs, hardware, timber, sugar, are the principal imports. There is a legislative assembly of 21 members—seven nobles elected by their peers, seven ministers of the Crown, and seven representatives elected by the people. The British High Commissioner exercises civil and criminal jurisdiction over all foreign citizens and supervises the finances. The queen reigning in 1922 was Salote, who succeeded to the throne in 1918. The British High Commissioner in 1922 was Sir Cecil Hunter Rodwell.

TONGASS NATIONAL FOREST. See FOREST SERVICE, UNITED STATES.

TONKING, a French Protectorate in Indo-China. Its area is 40,530 square miles and its population 6,470,250, of whom 6,875 are Europeans. The capital, Hanoi, is a modern city of 90,303 inhabitants. The local budget for 1921 balanced at 13,131,390 piastres. Rice is the chief crop. Other crops are Indian corn, sugarcane, coffee, tea, tobacco and arrowroot. Fruit trees are numerous. Raw silk is produced in large quantity. Hard coal and rich limestone deposits constitute most of the mineral wealth. Rice, Indian corn and animal products are the chief exports. Imports consist of metals and machinery, beverages, textiles, yarns and tissues. See FRENCH INDO-CHINA.

TORONTO, University of, a non-sectarian, co-educational institution, founded in 1827 and located at Toronto, Canada. In 1922-23 it had a faculty of 567 members, 4,855 students, and property valued at \$8,740,002. Its income for

1921-22 was \$1,914,545. Sir Robert Falconer, K.C.M.G., is president.

TOWNSEND, Horace, American art critic and author: b. Claughton, Cheshire, England, 3 Feb. 1859; d. New York City, 9 May 1922. He was educated at Birkenhead School, England, and thereafter studied architecture under Charles Barry, President of the Royal Institute of British Architects. He moved to New York in 1880, took up journalism, and from 1882-90 was a member of the staff of the *New York Tribune*. From 1890-1900 was the London correspondent of the *New York Herald* and the *Philadelphia Public Ledger*. He was regarded as an authority on works of art. He published 'A Little Girl in Groy' (1898); 'A Handful of Silver' (1902); 'Old Wedgwood' (1907); 'Old English Potteries and Porcelains' (1914); and the play 'Child of Naples' produced by Alexander Salvini in 1889. He was joint author of the plays 'Myles Aron' and 'Mavourneen.' He also edited 'Some Letters of R. L. Stevenson' (1902).

TRACK AND FIELD ATHLETICS. See SPORTS.

TRACY, William W.: d. 1 March 1922. See HORTICULTURE.

TRADE MARKS, Registration of. See PATENTS.

TRADE UNION EDUCATIONAL LEAGUE. See COMMUNISM.

TRADING WITH THE ENEMY ACT. See ALIEN PROPERTY CUSTODIAN.

TRANSATLANTIC RECORDS. Finishing her trip on the first day of December, the White Star liner *Majestic*, in 1922, established a new transatlantic time record by making the run from New York to Cherbourg (3,100 miles) in five days, six hours and 13 minutes. This was one hour and 56 minutes faster than the record run of the Cunard liner *Mauretania*, made on 24 July 1922 when she covered the route in five days, eight hours and 9 minutes. During the first day of her record run, the *Majestic* made 554 miles, at an average speed of 24.57 nautical miles an hour; on the second day she made 564 miles, averaging 24.53 miles per hour; on the third day she made 572 miles, averaging 24.87 miles per hour; on the fourth day she made 568 miles, averaging 24.70 miles per hour and up to noon of the fifth day she made 562 miles, averaging 24.43 miles per hour. Her average for the entire trip was 24.59 knots per hour. The *Majestic* left Ambrose Channel lightship at 12:57 p. m. on the 25 November, and passed the buoy off Cherbourg breakwater at 12:10 midnight on the 1 December. Allowing five hours difference in time between New York and Cherbourg, her running time was as given above, i. e., five days, six hours and 13 minutes. In 1910 the *Mauretania* made the trip from Queenstown to New York in four days, ten hours and 41 minutes, having the previous year made the trip from New York to Queenstown in four days, 13 hours and 41 minutes. In April 1922 the *Mauretania* made the trip from New York to Cherbourg in five days, eight hours and 56 minutes. In 1909 the *Cronprinzessin Cecilie* made the run from New York to

Plymouth in five days, seven hours and 25 minutes. In 1904 the *Deutschland* made the trip from New York to Naples in seven days, 16 hours and 44 minutes.

TRANSVAAL, a province of the Union of South Africa. Area, 110,450 square miles and population, 2,085,837 in 1921. Johannesburg is the largest city with 149,678 inhabitants. Other cities are Pretoria, 45,163; Benoni, 14,474; and Krugersdorp, 13,494. See SOUTH AFRICA, UNION OF.

TRANSYLVANIA, a district of south-eastern Europe formerly part of the Kingdom of Hungary but since the World War annexed by Rumania. Its area is 22,312 square miles with a population of 2,678,367. See RUMANIA.

TRANSYLVANIA COLLEGE, a co-educational institution founded in 1783 and located at Lexington, Ky. In 1922-23 it had a faculty of 30 members, 296 students, property valued at approximately \$1,000,000 and an income of \$74,000. Andrew D. Harmon, LL.D., is president.

TRASK, Katrina. See PEABODY, MRS. GEORGE FOSTER.

TRIESTE, city and district near the head of the Adriatic Sea acquired by Italy from Austria-Hungary as a result of the Treaty of Saint Germain. The area of the district is 37 square miles with a population of 229,510. See ITALY.

TRINIDAD AND TOBAGO, islands off the coast of South America belonging to Great Britain. Trinidad has an area of 1,863 square miles and Tobago 114 square miles. The population in 1920 was 391,279. Port of Spain on Trinidad is the capital. English is generally spoken. The inhabitants are about two-thirds natives of the West Indies of African descent. The white inhabitants include English, French, Portuguese and Spanish. There is a large asphalt lake on Trinidad. Asphalt and oil are the chief products of the colony. In 1920, 113,697 tons of asphalt were exported and 31,905,833 gallons of crude petroleum. Petrol spirit exports the same year amounted to 21,420,821 gallons. Other exports were cocoa, 60,723,623 pounds, copra 2,134,570 pounds, 47,967 tons of sugar, 54,965 gallons of rum, and 557,491 gallons of molasses. The revenue from asphalt in 1920 amounted to £47,708. There are 124 miles of railways. In Tobago are grown cotton, tobacco, rubber, and cacao. Trade with the United States in 1922 amounted to \$4,882,268 for imports and \$4,565,575 for exports. The two islands form a single colonial unit of administration. The governor—Sir H. S. Wilson in 1922—is assisted by an Executive Council of seven members and a Legislative Council of 21 members.

TRINITY COLLEGE, an educational institution for men located at Hartford, Conn. It was founded in 1823, and though non-sectarian, is of Episcopal affiliation. In 1922-23 the faculty numbered 26 and the students enrolled, 264. The institution's property is valued at \$1,416,472.86 and its income for the current year was given as \$99,182.97. Its president is R. B. Ogilby.

TRINITY UNIVERSITY, a co-educational institution, non-sectarian but under Presbyterian control, founded in 1869 and located at Waxahachie, Texas. In 1922-23 it had a faculty of 26 members, 385 students, property valued at \$350,000 and an income of \$118,000. John Harmon Burma, D.D., is president.

TRIPOLITANIA. See LIBYA.

TRUST COMPANIES. According to the 1922 edition of 'Trust Companies of the United States' published by the United States Mortgage and Trust Company of New York, there were in the United States, in that year, 2,372 trust companies with resources aggregating on 30 June \$12,739,620,733.25, as compared with 2,390 trust companies which in 1921 reported assets totaling \$12,323,430,513.35. The deposits of these companies aggregated \$10,470,477,813.01 in 1922 as compared with \$9,554,012,518.71 in 1921. The States showing the largest gains for the year were: New York, \$227,757,000; Illinois, \$109,000,000; California, \$77,292,000; New Jersey, \$53,331,000; Maryland, \$34,222,000; Massachusetts, \$33,214,000; Rhode Island, \$15,257,000; Virginia, \$15,254,000. The North Atlantic and North Central States showed the largest sectional gains. The number of trust companies in each State with their combined resources is as follows: Alabama, 33, \$43,821,971.77; Arizona, 12, \$10,520,856.68; Arkansas, 40, \$52,068,286.51; California, 26, \$879,831,752.02; Colorado, 19, \$58,723,554.98; Connecticut, 75, \$186,416,810.28; Delaware, 15, \$45,120,497.85; District of Columbia, 7, \$77,613,821.93; Florida, 30, \$39,523,015.25; Georgia, 18, \$45,769,980.62; Hawaii, 6, \$6,632,281.12; Idaho, 9, \$9,138,593.73; Illinois, 102, \$1,263,537,383.76; Indiana, 166, \$227,431,550.94; Iowa, 93, \$94,394,351.79; Kansas, 13, \$15,902,939.96; Kentucky, 60, \$75,500,478.17; Louisiana, 53, \$246,708,717.09; Maine, 54, \$127,695,501.81; Maryland, 28, \$209,126,627.32; Massachusetts, 101, \$786,119,148.17; Michigan, 11, \$49,855,642.54; Minnesota, 25, \$48,651,348.26; Mississippi, 32, \$35,398,016.30; Missouri, 105, \$393,442,041.61; Montana, 19, \$33,745,256.08; Nebraska, 24, \$17,363,355.97; Nevada, 3, \$4,449,775.03; New Hampshire, 13, \$18,108,368.06; New Jersey, 133, \$682,807,190.55; New Mexico, 8, \$6,351,519.49; New York, 198, \$3,556,356,518.09; North Carolina, 102, \$120,349,533.92; North Dakota, 4, \$2,157,947.66; Ohio, 76, \$970,778,773.86; Oklahoma, 11, \$5,868,477.42; Oregon, 8, \$9,783,177.82; Pennsylvania, 367, \$1,563,473,528.64; Rhode Island, 12, \$211,062,884.11; South Carolina, 22, \$18,495,855.78; South Dakota, 13, \$9,544,455.49; Tennessee, 103, \$126,047,726.58; Texas, 69, \$69,018,849.85; Utah, 7, \$23,035,152.16; Vermont, 39, \$67,005,384.97; Virginia, 35, \$78,720,017.25; Washington, 19, \$31,309,902.08; West Virginia, 31, \$64,080,683.37; Wisconsin, 14, \$14,913,536; Wyoming, 9, \$5,847,647.56. The capital of the 2,372 companies, which reported in 1922, totaled \$810,262,013.93 while surplus and undivided profits totaled \$918,150,843.57. The year 1922 was the one hundredth anniversary of the trust company activities in the United States, the first grant of fiduciary powers to a corporation having been made in 1822.

TUAMOTU ISLANDS. See FRENCH ESTABLISHMENTS IN OCEANIA.

TUBERCULOSIS. The best available statistics clearly indicate that the death rate from tuberculosis has been cut in half since the National Tuberculosis Association opened its office in January 1905. To be exact, the decline has been from 200.4 per 100,000 population in 1904 to 99.4 in 1921. Stated otherwise, this means that in the year 1922, if the same death rate were prevailing that did prevail in 1904, there would have been 100,000 more deaths from tuberculosis than actually occurred this last year.

The development of a more cordial relationship with the other national health agencies in this country and with international agencies has been one outstanding feature of the year's work. From the point of view of one of the individual members of the National Health Council, it is still difficult to say what have been the financial gains achieved through that body. It is certain, however, that the gain is in better understanding that comes inevitably from working together and living together, which, while it cannot be measured in dollars and cents, is of incalculable benefit. One might say the same thing of the development of relations between the National Association and the International Union against Tuberculosis. The business man might find it difficult to justify any considerable expenditure of money in promotion of international tuberculosis relations. It is unquestionably true, however, that the National Tuberculosis Association and its affiliated organizations have just as much to gain from the promotion of such cordial relations as have the foreign organizations.

This last year has also been one of binding into a more coherent whole the State associations with the National Association. The agitation of the last three years particularly has been productive in bringing the National and State associations as well as the National and local associations into a closer working relationship than at any previous stage in the history of the tuberculosis movement. The State associations now definitely become the distributing and selling centers of the National Association. They also become in a real sense the Association itself. While the National Association is not a federation of State associations, it is more and more becoming the servant and leader of the State associations.

In the field of education, probably the most significant achievement of the year has been the increased effort toward standardizing the Modern Health Crusade movement. The work of the committees in this direction has been of signal significance. The Modern Health Crusade is now at that stage of development where it can and should be sold as a basis for a system of health education to the different State departments of education. Realizing this possibility the National Association with the help of the State organizations is reducing the essence of the Crusade to a teaching syllabus which in turn will, it is hoped, become the basis of education in personal hygiene and health habit-forming instruction.

The announcement of the Milbank Fund in May of its entrance into the field of tuberculosis demonstration is an outstanding feature of the year's development. Most of the income of this

fund of \$10,000,000 is now available for the conduct of a series of tuberculosis demonstrations in New York State, the first of which is about to be inaugurated. Framingham has accomplished no more significant result than this, that it has stimulated another series of demonstrations of a similar character. These Milbank Fund demonstrations will in turn answer the many questions that Framingham because of its restricted area could not answer and will prove conclusively to the American municipalities whether tuberculosis can or cannot be controlled provided sufficient funds are available for the purpose.

In the hospital and sanatorium field probably the most significant development has been the establishment of the Ida Potts Memorial at Hudson, N. Y., which it is hoped will be the nucleus of a great industrial and vocational colony for arrested cases of tuberculosis emulating and developing further the ideals of Varrier-Jones at Papworth Village in England.

No outstanding scientific discoveries in the field of research or treatment can be recorded. The increasing number of studies being made all over the world is steadily improving our knowledge of the *tubercle bacillus* and its activities in the human body.

PHILIP P. JACOBS,

Publicity Director, National Tuberculosis Association.

TUBERCULOSIS IN ANIMALS. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF; VETERINARY MEDICINE AND SURGERY.

TUFTS COLLEGE, a non-sectarian educational institution, founded in 1852 and located at Tufts College, Mass. The Liberal Arts and Engineering schools are for men. The medical and dental departments are co-educational. In 1910, Jackson College for women, with liberal arts and secretarial courses, was opened as a department of Tufts College. In 1922-23 the college had a faculty of 368 members, 2,094 students, property valued at \$4,456,333.02 and an income of \$615,305.74. John A. Cousens, LL.D., is president.

TULANE UNIVERSITY OF LOUISIANA, a non-sectarian, State institution founded in 1834 and located at New Orleans, La. It is co-educational in professional schools with separate department for women in the undergraduate courses. In 1922-23 it had a faculty of 374 members, 4,250 students, property valued at \$1,951,403.31 and an estimated income of \$800,000. Albert B. Dinwiddie, Ph.D., LL.D., is president.

TULARAEMIA. See MEDICINE AND SURGERY, ADVANCEMENT OF; PUBLIC HEALTH SERVICE, UNITED STATES.

TULSA, University of, a co-educational institution of the Presbyterian Church of the United States of America, founded in 1894 and located at Tulsa, Okla. In 1922-23 it had a faculty of 25 members, 400 students, property valued at \$500,000 and an approximate income of \$80,000. James M. Gordon, A.M., LL.D., is president.

TUNNELS. The most important tunnel under construction in 1923 is the twin vehicular

tunnel under the Hudson river, connecting the City of New York with Jersey City, and designed to carry the enormous automobile and other vehicular traffic that exists between the States of New York and New Jersey at this point. After 20 years of planning and discussions, the laws under which the tunnel is being constructed were passed by the legislatures of the States, and commissions were appointed to carry on the work. A Congressional resolution, approved by the President was also essential to establish legality. Each State appropriated \$1,000,000 to start the work. The contracts were let in March, 1922, and actual work began at the Canal and West street terminal in New York 31 March. Booth & Flinn, Ltd., the contractors, are to receive \$19,331,723 for the work on the west end, and the total cost of the twin tunnels is expected to be over \$30,000,000.

The total length of this pair of tunnels is 9,250 feet. The circular tubes are 29½ feet outside diameter, made of cast-iron segments, bolted to form three-foot rings; each ring is lined with concrete. The tubes pass under the river 60 feet below low water mark, and they will lie in a bed of loose rock and mud, supported by combination steel and concrete piles running down to bedrock. The roadways are 20 feet wide and 12 high, the large half-moon spaces above and below being used principally for ventilation. They have an annual capacity of 15,800,000 vehicles, but the expected traffic is about one-third of this total. The Manhattan terminal has its entrance at Broome Street, and its exit at Canal and Varick streets. The Jersey City terminal has entrance on 12th Street and exit on 14th Street. The ventilation problem was exceedingly difficult to work out, involving conditions beyond previous experience, as most of the vehicles would be delivering their gasoline exhausts continually into the traffic tubes. The accepted plan is to provide four shafts, two on each side of the river; two of these shafts will be on the edge of the river at the pierhead lines, the others close to the portals. Fresh air will be pumped continually into the ducts on the under side of the tunnels and the vitiated air will be sucked out from the ducts on the upper side of the tubes. The system provides 40 complete changes of air per hour.

Electric power houses were completed in advance to supply the power and compressed air for tunneling. The method is to make each advancing shield a working head, within which the men form the iron and concrete rings, one at a time, working under compressed air, so the water cannot get in on them. When a ring is completed it is forced ahead by air-pressure, there being no digging. The advancing head simply forces its way through the loose rock, silt and mud. The supporting piles involve novel construction. They are primarily steel cylinders, ¾ inches thick and 24 inches diameter, made in convenient lengths, closely fitted and forced down to the bedrock, 250 to 260 feet. Then the water that has flowed into them is pumped out, and concrete blown into its place. When completed the top portion of 60 to 110 feet is cut off by rotary cutting tools working within the pipe. From 1,000 to 1,500 men are employed continuously on the work, which is scheduled

to be completed in April 1925, beyond that time involving penalties for the contractor.

Since the tunnel heads are pushed into the river mud quite near the water line, the river bottom is strengthened as the work proceeds by dumping layers of rock and clay over the places where the tunnel-heads are progressing, thus lessening the chances of water getting into the working heads. When the tunnels were built under the East River at New York, one of the "sand-hogs" as the workers are colloquially called, was actually blown out of the tunnel head, and into the river, where he swam to the surface and escaped, badly frightened but not seriously injured.

The cost of these vehicular tunnels is to be recovered by a system of tolls, and these are expected to pay for maintenance and wipe out the original investment within 20 years. The tolls will be practically the same as the ferry charges, and as there will be no waiting, the vehicular traveling public is sure to patronize the tubes as soon as they are open. Incidentally, coal, food supplies and merchandise coming into New York from the West will reach its destination several hours sooner. The actual driving of the tunnel shields was begun on the New York side at the close of 1922, and the driving from the Jersey side a few months later.

An even more costly project than this vehicular tunnel is the long-agitated tunnel connecting Brooklyn with Staten Island, passing beneath the Narrows. It is for both passenger and freight transit, and will cost \$60,000,000. A start was made 3 Jan. 1923, when Mayor Hylan of New York signed a contract for the preliminary work of constructing the Brooklyn shaft at a cost of \$494,539. This shaft is at 68th Street and Shore Road, Bay Ridge, in the Borough of Brooklyn, and trains on the Fourth Avenue subway will eventually run through the tunnel two miles under the Narrows, to a terminal at St. George, near the Municipal ferry. The total length between terminals will be about three miles. It is to be a double tunnel with two tubes.

A third ambitious scheme for tunneling in the metropolitan district of New York is seeking legislative approval in New York and New Jersey. It is proposed to tunnel from Queens, under 125th street, New York, right under the Hudson, then under the Palisades, and on to Paterson, N. J. The estimated cost is \$75,000,000. It is believed that such a thoroughfare would afford immense relief to the great traffic that now crosses New York City several miles to the south.

Among interesting tunnels and tunnel projects in other parts of the United States is the Shandaken tunnel, a part of the new Catskill water supply system. This is expected to be completed about the end of 1923. It is 18 miles long, cut through solid rock to a diameter of $11\frac{1}{2}$ by $10\frac{1}{4}$ feet, and is to carry the overflow of water from the great Gilboa dam. It dips during its length, so that it operates on the siphon principle, delivering the water again at the exit only slightly below the level of entrance. The Moffat tunnel, under James Peak, Colorado, has been authorized by the State legislature, and is to be financed by a bond issue of \$6,720,000. This is to pass under

what is known as the Continental Divide, about 50 miles west of Denver. It will shorten the rail distance between the Atlantic and Pacific about 70 miles, and bring Denver and Salt Lake City in about 100 miles closer by railway connection. The tunnel length will be six and a half miles, and the eastern portal will be 9,190 feet above sea level, the western 9,100 feet. It will save 2,500 feet in grades, as the present route via Corona carries the tracks to a high point of 11,660 feet. The plan of boring this tunnel is novel. It is first to be cut through with a "pioneer bore" eight by ten feet, to permit the transit of men, material and tools, before the full size bore is begun. The motive power in the tunnel will be electric, so that there will be no smoke nuisance to take care of.

A notable rock tunnel is nearing completion in 1923, around Niagara Falls, on the American side. It is 32 feet inside diameter and 4,300 feet long. Starting at the upper river level it dips 130 feet, then rises again at the forebay of the hydraulic plant No. 3 of the Niagara Falls Power Company. The water carrying capacity of this tunnel is 10,000 feet a second and it will eventually deliver 70,000 added horse-power at the reaction turbines.

Many rock tunnels are in course of construction in the Western United States in connection with hydroelectric development. The tunnels built years ago for the famous Kern River development in California are being enlarged to four times their original capacity. The Great Western Power Company is constructing a 21,900 foot tunnel as a part of the Caribou project, on the Feather River. The East Bay Water Company is running a 14,553 foot tunnel from San Pablo dam to Oakland. The Skagit project, near Seattle, involves two tunnels one of 2,675 the other of 10,978 feet.

Two important tunnels are in progress in Japan. The largest is the Tanna tunnel, a railway shortening project. The main tunnel is to be five miles long, horseshoe shape, 28 feet wide and $22\frac{1}{4}$ feet high. Twenty-two smaller tunnels on this short line bring the total tunneling up to over 50,000 feet. The other Japanese tunnel is an under-water project, for railway connection between the two larger islands of the empire, at Shimonoseki and Moji. The water channel to be spanned is about a mile in width, and the cutting is through solid rock.

In England, the City and South London Railway, the oldest of the tube systems, is enlarging the diameter of its tunnels, and maintaining traffic at the same time, an engineering feat of some quality. There is also projected a railway tunnel under the Thames at Gravesend to connect the railways north and south of the river. The estimated cost is about \$20,000,000. The Thames is 54 feet deep and 2,400 feet wide at the point of crossing.

The famous Simplon tunnel, under the Alps, $12\frac{1}{4}$ miles long, the most noteworthy tunneling project of its time, proved inadequate for the traffic to be carried, and there was completed in October 1922, a parallel or twin tunnel that will greatly expedite international travel.

CHARLES H. COCHRANE.

TURKESTAN. See CHINA; RUSSIA.

TURKEY, a country of southeastern Europe and western Asia, the greater part of which lies in the Peninsula of Asia Minor. Its borders were still undefined at the close of 1922.

Area and Population.—Before the World War Turkey or the Ottoman Empire consisted of Turkey in Europe, Turkey in Asia (Anatolia, Arabia, Syria, Mesopotamia, Palestine and Kurdistan). The Balkan War of 1912 resulted in a loss of considerable Turkish territory in Europe, the cessions going to Bulgaria, Serbia, Montenegro and Greece. During the World War Cyprus and Egypt, formerly suzerainties of Turkey were lost to it, Cyprus being annexed by Great Britain and Egypt being declared a Protectorate. The Treaty of Peace with the Allied and Associated Powers, signed 10 Aug. 1920, reduced the territory of Turkey still further, practically all of Turkey in Europe being ceded to Greece together with the administration of Smyrna and a surrounding strip of territory; Mesopotamia, Palestine, Syria, were made independent under mandates and the Hejaz and Armenia were made independent. Constantinople was to be retained by Turkey but the coastal area of the Dardanelles was placed under a Commission of the Straits. This Treaty was never ratified and in 1921 certain concessions were made to Turkey in an effort to make the Treaty acceptable. Soon after hostilities broke out between Greece and the Turkish Nationalist forces under Kemal Pasha and continued into 1922 when the Nationalist Turks defeated the Greeks, captured Smyrna and threatened the Zone of the Straits. These events prevented the Allied Powers from bringing about a general settlement as to Turkish territory. Finally in November 1922 the Near East Conference was gathered at Lausanne, Switzerland, in an attempt to harmonize Turkish National aspirations with the rival claims of the nations adjoining Turkey and with those of the Great Powers. For the Turkish claims and the results of the Lausanne Conference see section on History below. Old Turkey had an area of 613,724 square miles with a population of 20,973,900. Had the Treaty of Sevres become operative, Turkey would be deprived of a territory of 438,750 square miles with a population of about 12,000,000, leaving to the new Turkey 174,900 square miles and a population of 8,000,000. In European Turkey in addition to Turks there are numbers of Greeks, Bulgars, Armenians, Gipsies and Jews, while in Turkey in Asia there are about 4,000,000 Arabs, besides Armenians, Syrians, Kurds, Circassians, etc. Constantinople, the capital, has a population of 1,000,000. Other chief cities are Brusa (110,000); Kaisariyeh (54,000); Konia (45,000); Trebizond (55,000); Bitlis (40,000); and Sivas (65,000).

Religion.—The established religion is Mohammedanism of which the head until 1922 was the Sultan. After the flight of Sultan Mohammed VI on 17 Nov. 1922, his cousin, Abdul Mejid was elected Caliph of Islam, or head of the state religion apart from the headship of the state. Mohammedans form the vast majority of the population, but at least until 1922 there existed a number of non-Mohammedan native communities or "millets," including Orthodox

Greeks, Latin Catholics, Armenians of two rites, Chaldean Catholics, Syrian Catholics, Protestants, Melchites and Jews.

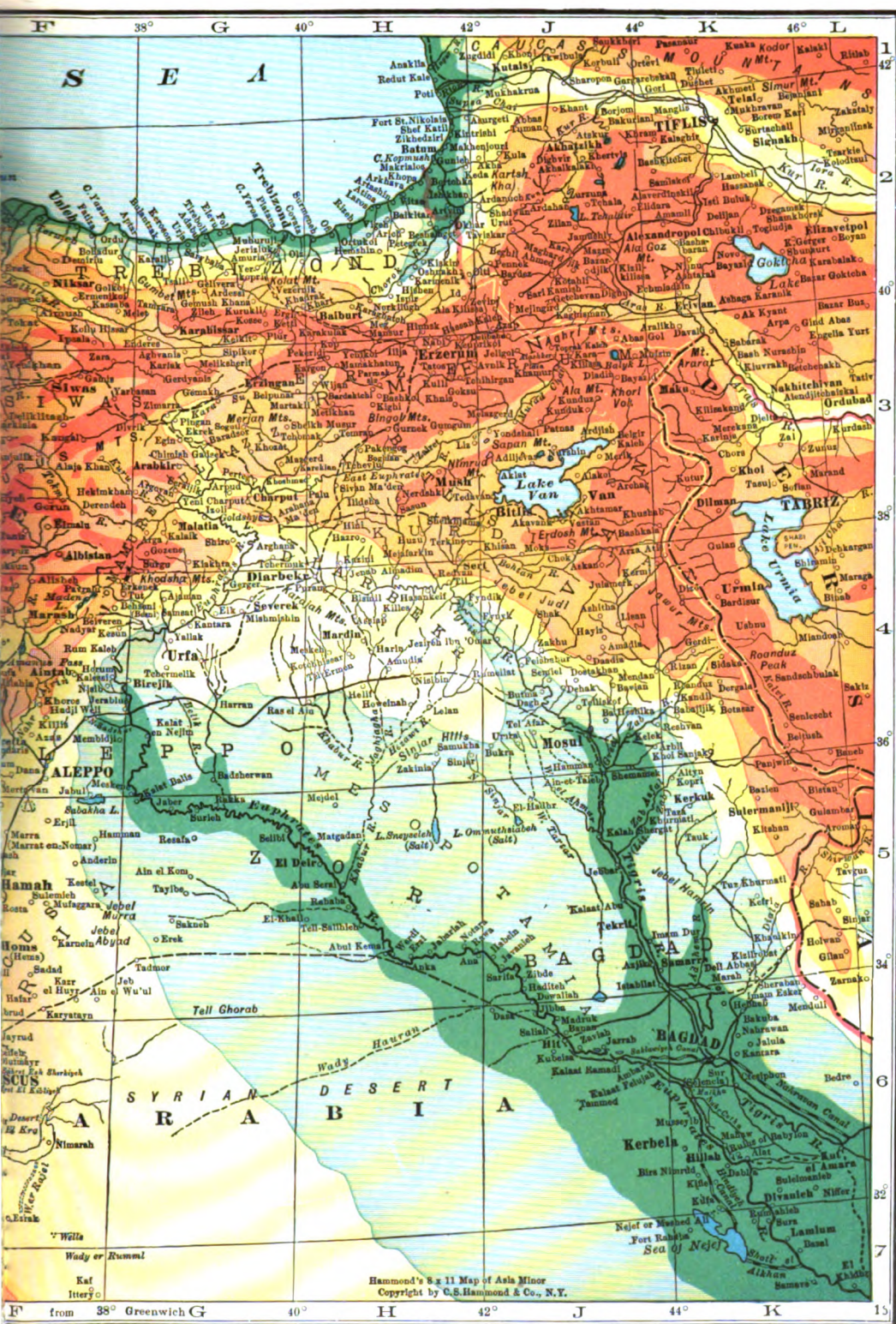
Education.—Elementary education is compulsory in Turkey at least nominally for all children from seven to 16 years of age. There are several kinds of schools, the total number of which has been estimated at 36,230 with 1,331,200 pupils. There are several schools maintained by foreign missionaries. There is a university at Constantinople with faculties of art, theology, law, medicine, and science. In addition there are a number of higher special schools.

Production and Industry.—Land is held under three forms of tenure—Miri, or crown lands; Vakuf or pious foundations, and Mulk or simple freehold. Agriculture is carried on in the most primitive fashion, though the land is very fertile. The chief crops are the cereals, tobacco, cotton, figs, nuts, almonds, grapes, olives, coffee, and all varieties of fruits. Anatolia produces wool and mohair; the coffee centre is in the Hodeida district; opium is an important crop about Konia, while tobacco is grown both in Turkey in Europe and Turkey in Asia. The Brusa and Constantinople areas are noted for the production of silk, the production of cocoons in 1921 amounting to 1,350,000 kilos. The tobacco crop of 1919 amounted to 4,273,000 kilos. There are 21,000,000 acres under forest but the conservation regulations are poorly enforced with the result that the country is being rapidly denuded of its timber. Pine, oak, cedar, fir and larch are the chief trees in the forests. Turkey is rich in minerals but its mines are little worked. Silver, lead, antimony, copper, manganese, borax, coal and lignite, salt, are among the chief mining products. Chrome, emery and meerschaum are other products of commercial importance. The production of coal and lignite reaches about 400,000 tons annually; of silver about 2,500 kilos annually; of borax 7,500 tons annually; of kaolin 40,000 tons yearly. The fisheries are well developed, the annual value of the catch of the Bosphorus region alone being valued at \$1,200,000 yearly. Sponge and pearl-fishing are important branches of this industry. The manufacturing industries are still in a primitive state. Wool and cotton-spinning are the chief industries. There are 50,800 cotton spindles in operation, while the output of the woollaryn mills is about 2,750,000 pounds yearly.

Commerce.—In 1920 Turkey imported goods to the value of 169,396,267 Turkish-pounds and exported goods to the value of 47,625,882 Turkish pounds (normal exchange, Turkish pound equals \$4.50). In the first nine months of 1921 Turkish imports were valued at 73,237,199 Turkish pounds and exports at 19,756,524 Turkish pounds. Petroleum, sugar, and coffee were the chief imports, while opium, raisins, dried fruits, wool, carpets and tobacco were the chief articles of export. In 1920 the United States stood second in the list of countries furnishing Turkish imports, the United Kingdom being first.

Trade of the United States with Turkey and the Turkish people amounts to over 100 million dollars a year. This figure, according to the *Trade Record of The National City Bank of New York*, is based in part upon our own official





records and in part upon those of the Turkish Government, which puts its imports of United States merchandise in 1920 (the latest year for which its reports are available) at 25,953,000 Turkish pounds sterling. The value of its exports to the United States in the latest available year are put at 4,981,000 pounds sterling. Our own figures of trade with Turkey, which are based upon trade with the Turkish area outlined by the Treaty of Sevres (not yet ratified), are much less than those of the Turkish Government, which presumably accredits to the United States many articles of American origin entering Turkey through other countries, while our own figures only include those of the direct trade with the newly outlined and greatly reduced area now officially known as Turkey. Our own records of the fiscal year 1922 put the imports from "Turkey in Europe" at \$8,627,000 and the exports thereto \$19,217,000. The 1922 figures of trade with "Turkey in Asia" no longer include Hejaz, Arabia, Mesopotamia, Armenia, Kurdistan or "Greece in Asia" (all of which are separately stated) and as a result the official total of imports from Turkey in Asia is only \$1,372,000 and exports thereto \$760,000. The figures of our trade with "Greece in Asia," which apparently has now again fallen under Turkish control, are, imports therefrom \$10,802,000 and exports thereto \$3,156,000. While all of these figures, says the *Trade Record*, are of course "subject to revision" by reason of the recent developments in Smyrna and the Asiatic area formerly controlled by Greece, they at least justify the conclusion that our trade with the area now claimed by the Turks is in the vicinity of 100 million dollars.

Considerably more than half of our trade with the Turkish people consisted of imports, for the "trade balance" with that country has always been against us. We buy freely its tobacco, fruits, nuts, wool, mohair, coffee, and rugs; and while it wants manufactures in exchange for its raw products it quite naturally finds it more convenient to buy them from nearby Europe, with which it has been accustomed to trade for generations. Yet we do export limited quantities of certain manufactures to Turkey, including cottonseed oil, oleo oil, illuminating oil, cotton cloths, refined sugar, and miscellaneous manufactures. Tobacco is one of the largest of our imports from Turkey, amounting to about five million dollars in 1922 from Turkey in Europe and eight millions in 1921 from the area then designated as Turkey in Asia. The fruits and nuts from that area are also important and include figs, dates, and almonds in large quantities.

Finance.—According to the Treaty of Sevres of 10 Aug. 1920, Turkish finances were to be controlled by a Finance Commission composed of representatives of England, France and Italy. As a result of the chaotic state of the Turkish administration in the years following the war the financial system collapsed utterly. The Nationalist Assembly at Angora, however, voted a budget in 1921 with revenue estimates of 79,333,440 Turkish pounds and estimated expenditures of 86,519,650 Turkish pounds. The war with Greece in 1921–22 made further inroads on the Nationalist treasury and the deficit was even

greater than these figures would indicate. In 1920 the external debt of Turkey was placed at 171,527,034 Turkish pounds.

Defense.—The Treaty of Sevres imposed severe limitations on the number of Turkish troops, limiting the grand total of all arms to 50,000 men. The non-ratification of the Treaty and the rise of the Nationalist forces under Kemal left these prohibitions a dead letter. For the number of the Kemalists forces see article below on History.

Government.—During the year 1922 the Sultan's government at Constantinople was displaced by the Nationalist Assembly at Angora. On 3 Nov. 1922 the Assembly dethroned the Sultan and declared the Ottoman Empire at an end. At the same time the Assembly reserved the right to elect the Caliph as the religious head of the Mohammedan faith. There is to be no other Government in Turkey than that of the National Assembly, which declaration was regarded as equivalent to the establishment of a Turkish republic. For further details of the changes inaugurated in Turkey see following section.

History.—The Turkish people saw the year 1922 dawn with Turkey under two governments — that of the Sultan at Constantinople in virtual subjection to the Allied nations and that of Angora under the leadership of Mustapha Kemal in deadly struggle with the Greek forces in Asia Minor. The Angora Government late in 1921 concluded a treaty with France which heartened the Nationalist Turks as much as it depressed Greece and her ally, Great Britain. The Moslem nations were in full sympathy with the Nationalist movement in Turkey and recognized Angora as the centre of the Moslem world. They turned their eyes and hopes to the new Turkish capital, sent representatives there, and asked the leadership of the Nationalist Assembly for the Moslem world. The Angora government which adopted the friendliest attitude toward them all, signed political and commercial treaties with Persia, Afghanistan and Turkestan. The Allies decided to use their best efforts to bring about an armistice between the Greeks and Turks in Asia Minor and the text received in Athens 23 March of a tentative armistice asked the belligerents to accept an immediate cessation of hostilities. In reply the Greek government accepted the armistice proposals in principle conditional on certain reservations of a strictly military character. The Turkish Nationalists notified the Great Powers that their acceptance of the armistice was conditional on the withdrawal of the Greek army from the railway of Eski-Shehr to Afiun-Kara-Hissar within two weeks, and on the complete evacuation of Asia Minor by the Greek army within four months. This attitude drew from the Greek staff the declaration that under no circumstances would the Greek army abandon its present positions or evacuate Asia Minor. At the same time the Allies notified the Turkish Nationalists of their opposition to the evacuation of Asia Minor by the Greeks and declared that the Turks must accept the armistice as it was without new conditions. The problem was interrupted by the Genoa Conference. Meanwhile the non-Turkish elements in Asia Minor prepared to resist any and all attempts of the Turks or the

Allies to dislodge the Greek forces there. The Near East Conference at Paris in March modified the terms of the Sevres Treaty and Italy concluded a treaty with the Angora government which strengthened the position of the latter. Turkey was denied representation at Genoa but the Conference foundered on the Bolshevik demands though the Greek demands for Thrace and Smyrna continued a stumbling block to a settlement with Turkey. Little fighting took place during the summer but it was known that the Turks were improving their military strength from unnamed sources. On the Black Sea the Greek naval forces bombarded Samsun on 7 June on the ground that munitions were stored there. Late in June the British government in a note to the French government intimated that the long delay in effecting peace in Anatolia must come to an end and that the March proposals should be answered one way or the other. In June there were made charges that the Turk Nationalists were committing atrocities against the Greek populations remaining in their power. The menace of the situation in Anatolia was emphasized in July when the Greeks determined to bring about a solution of their long conflict in that quarter. An advance on Constantinople was determined upon but the project was frustrated by the British commander. Thereupon the Greeks issued a decree declaring Smyrna and the surrounding territory autonomous. In the last week in August the entire situation was changed by the sudden attack of the Turks on the Greeks along the front in Asia Minor. The Greek forces were routed and fell back on Smyrna where thousands of refugees gathered from the inland region. The Turks entered Smyrna on 9 September without resistance from the Greeks remaining there. The effects of the victory were far reaching. In Greece Constantine lost his throne within a few weeks and in Constantinople there was great rejoicing. A fire swept the city of Smyrna three days after the entrance of the Turks. It started in the Greek and Armenian quarter and was plainly of incendiary origin. The total loss was \$200,000,000 and about 1,000 lives. Thousands of Greeks were transported in Greek and Allied vessels to the Greek islands nearby. It was now feared that the Turks would cross the Straits and pursue the Greeks into Thrace and another Balkan war loomed on the horizon. Rumania, Bulgaria and Yugoslavia remained quiescent and the fear did not materialize. Greece marshalled her forces in Thrace but the Turks were insistent and demanded that Thrace be returned to Turkey. The Turks were incensed when they brought their forces near the Straits preparatory to crossing into Thrace to find the way barred by British forces at Chanak. The British remained firm in maintaining the neutral zone. For days it appeared that a clash between the British and Turks was inevitable but finally a joint note of the Allies from Paris to Kemal on 23 September promised the Turks full sway over Anatolia and Thrace to the Maritza River and possession of Constantinople, and that the Straits should be placed under the guardianship of the League of Nations. The note urged an immediate meeting of the Allies, Turkish and Greek generals at Mudania to formulate the terms of an armistice

pending a peace conference. Thus came to an end the Greek aspirations in Asia Minor. The Turkish reply was delayed until 5 October but it agreed to try to find some satisfactory solution of the Straits problem but it insisted on the right of Russia to be consulted on the Straits. The Mudania Conference concluded its labors on 10 October with the signing of an armistice convention providing for the evacuation of Thrace and the taking over of that territory by the Turkish civil authorities. Following the Mudania Conference events came fast one upon the other. The Turkish Nationalists on 1 November abolished the Sultanate, thereby ending a dynasty dating back to 1299. At the same time the Angora Assembly claimed the right to continue the Caliphate but to make it subject to its own control. The Turks were determined to secure the fullest control possible of what remained of Turkey in Europe and set about raising an army of 30,000 in Thrace despite the objections of the Allies. On 5 November came the news that the Nationalists had seized Constantinople and ordered the Allied forces to evacuate. The Allied commissioners accepted the new regime and the Sultan's ministry resigned. The Allies at the same time were informed that the Straits would be closed to Allied shipping except under special permits. A succession of similar demands showed the spirit of the now victorious Turks. Invitations were issued on 26 October to a conference at Lausanne, Switzerland, on 13 November to bring peace in the Near East. Russia and Bulgaria were among the nations summoned to discuss the question of the Straits. Ismet Pasha, the Angora Foreign Minister, headed the Turkish delegation to Lausanne and bore instructions from the National Assembly to obtain the realization of the following program: First, the frontiers of Turkey to be in accordance with the national pact; second, Greece to pay an indemnity; third, suppression of the capitulations, or extraterritorial rights for foreigners; fourth, modification of the frontiers of Iraq (Mesopotamia); and, fifth, complete independence for Turkey, financial, economic and political.

On 16 November the National Assembly accused the ex-Sultan, Mohammed VI, of treason and ordered that he and his cabinet ministers be placed on trial. The Sultan determined to escape and on 17 November escaped on board the British dreadnought *Malaya*. He was taken to Malta. Abdul Medjid Effendi, second son of the late Sultan Assiz, was elected Supreme Caliph of the Moslems by the National Assembly at Angora on 18 November and was invested with the sacred mantle of the Prophet on 24 November. For the first time in history the ceremonial prayers were said in Turkish instead of Arabic. Adrianople was taken over by the Turks on 25 November. Eight of the leading Turkish opponents of the Nationalist government were hanged at Angora on 12 November. Many others had escaped to Egypt and Europe. The deliberations of the Lausanne Conference in which the national status of Turkey was finally determined are fully chronicled elsewhere. See NEAR EAST.

TURKO-GRECIAN WAR OF 1921-22.
See NEAR EAST; PEACE AND ARBITRATION; INTERNATIONAL.

TUSCULUM COLLEGE, a non-sectarian co-educational institution, founded in 1794 and located at Greeneville, Tenn. In 1922-23 it had a faculty of 25 members and 200 students. No information given as to value of institution's property or its income. Charles Oliver Gray, D.D., LL.D., is president.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE, a non-sectarian co-educational institution for colored students, founded in 1881 and located at Tuskegee Institute, Ala. In 1922-23 it had a faculty of 231 members, and property valued at \$4,017,714.33. Number of students enrolled and the institution's income not given. Robert R. Moton, LL.D., is president.

TUTANKHAMEN, Tomb of. See ARCHAEOLOGY; PHILOLOGY.

TYPHOID FEVER. See MEDICINE AND SURGERY, ADVANCEMENT OF.

TYPHUS FEVER. See MEDICINE AND SURGERY, ADVANCEMENT OF; PUBLIC HEALTH SERVICE, UNITED STATES.

TYPOGRAPHICAL UNION OF NORTH AMERICA, International. A society of typesetters, compositors and linotypers, banded together for mutual protection. It was founded in 1852 as the National Typographical Union and took the name International in 1869. Officers' reports for the fiscal year 1922 show a total membership of 68,450. Total

receipts from all sources for the year were \$11,498,451.89. The total expenses were \$10,253,145.75. For the support of its pension fund the organization collected \$655,721.44. It expended in pensions and the administration of the fund \$729,869.90. The receipts of the mortuary fund were \$648,475.54. The expenditures for mortuary benefits and administration of the fund aggregated \$393,906.98. For the support of the Union Printers Home at Colorado Springs there was collected \$247,486.90. A special assessment collected for defensive purposes amounted to \$9,539,648.61. The expenditures for defensive purposes were \$8,708,320.79. The general fund receipts of the organization were \$407,115. The expenditures from said fund were \$171,797.08. At the close of the fiscal year the organization had a balance of \$3,263,032.93 in bank and invested in government and municipal bonds. The union has its headquarters in the Bankers Trust Building, Indianapolis, Ind. The officers of the organization are as follows: President, John McParland; First Vice-President, Charles P. Howard; Second Vice-President, William R. Trotter; Third Vice-President, Charles N. Smith; Fourth Vice-President, Hugo Miller; Secretary-Treasurer, J. W. Hays.

TYROL, a former Crownland of Austria-Hungary, which was divided between Italy and the republic of Austria at the close of the World War. See AUSTRIA; ITALY.

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UBANGI-SHARI. See FRENCH EQUATORIAL AFRICA.

UGANDA PROTECTORATE, a British possession in East Africa bounded north by the Sudan, south by Tanganyika Territory, west by the Belgian Congo and east by Lake Rudolf, and Kenya Colony. Its total area is 110,300 square miles with an estimated population of 3,071,608, of whom 3,064,735 are natives, 5,604 Asiatics, and 1,269 Europeans. About 785,000 of the Baganda race are Christians. There are 80,000 children attending the French and British mission schools. Cotton is the principal product, but coffee, rubber, cocoa and oil seeds are grown. There are extensive forests with very valuable timber. In normal years the revenue balances the expenditures at about £455,000. The seat of the British administration is at Entebbe but the native capital is Mengo. There is a steamer service on Lake Victoria and the Uganda Railway connects the Protectorate with the Nile boats below the rapids. The exports of the Protectorate in 1920 were valued at £1,828,537. Cotton, coffee, oil seeds, rubber, ivory, hides and skins formed most of the exports. The Governor and Commander-in-Chief in 1922 was Sir R. T. Coryndon.

UKRAINE, a Socialist Republic of southern Russia in economic and military alliance with the Moscow Soviet state. Area, 174,510 square miles; population, 26,000,000. The republic produces barley, wheat, oats, rye, beets and potatoes. The manufacture of sugar is the chief industry. Cereals form nearly two-thirds of the exports and sugar 22 per cent. Of the imports textiles are over one-half of the total. The Ukraine has 11,070 miles of railways. See RUSSIA.

UNAFLOW, or UNIFLOW ENGINE. See ENGINE, UNAFLOW, OR UNIFLOW.

UNEMPLOYMENT. At the beginning of 1923 unemployment in the United States had ceased to exist in any serious proportions, as shown by data published in the January 1923, *Industrial Employment Information Bulletin*, of the United States Employment Service. No State reported any really serious unemployment situation, and of the 18 States that reported some unemployment, half of them explained it as coming from seasonal causes, while the other half reported unemployment in certain localities only, or as prevailing mostly among unskilled labor or in certain trades, temporarily. These facts are all the more striking when it is borne in mind that less than two years ago it was estimated that as many as between 5,000,000 and 6,000,000 workers were without jobs. The United States Employment Service carries out an important purpose—to foster and promote the welfare of wage-earners of the United States, including juniors legally employed, and specifically to improve their opportunities by regularly collecting and publishing data relative to employment opportunities; maintaining a sys-

tem for clearing labor between the several States; and co-operating with and co-ordinating the public employment offices throughout the country. Congress provides an annual appropriation of \$225,000 for the furthering of these ends. That the service was of decided value in relieving the unemployment situation is made clear by the following concrete figures as to what was accomplished; 2,874,785 registrations recorded under direction of, and by co-operation with, the Federal service; 1,810,490 applications for help received, to which were referred 1,734,493 persons from among those registered. Of these as many as 1,458,746 persons actually obtained employment.

The following facts and figures indicate conditions of unemployment in some of the leading foreign countries. The *Gazette* of the British Ministry reports that during 1922, there were fewer trade disputes than in any year since 1918. The proportion of total British trade union membership unemployed at the end of December 1922, was 14.0 per cent, as against 16.8 at the end of January of that year. To be sure, there were fluctuations in the percentage, throughout the year, but the steady trend was downward. The high level for 1922 was 17.0 per cent (for April). On 19 Feb. 1923 the total number of registered unemployed in Great Britain was 1,340,000; these figures represent an average decline of more than 20,000 a week since 1 Jan. 1923. In Italy the number of unemployed 31 Jan. 1923 was 392,000, as compared with 382,000 on 31 Dec. 1922, and 617,000 on 31 Jan. 1922. It is to be noted that seasonal unemployment in Italy generally reaches its peak about the end of January. In France, the number of persons granted relief does not infallibly indicate the number of unemployed since not all localities have relief funds, and not all unemployed are registered even where such funds do exist. Still, the following data regarding such funds and relief bureaux do serve as an index to the situation: 264 public relief funds were established, of which 31 were departmental, and 233 municipal. In March 1921 the high point in unemployment relief was attained; at that time 91,225 persons were receiving assistance from public funds. The decline in unemployment has been steady, and on 23 Nov. 1922 only 2,077 persons were receiving assistance. At that time, moreover, there were in operation only three departmental unemployment relief funds and 32 municipal funds. In Austria, the number of unemployed in the Vienna industrial district, at the end of January 1923, was 101,000 (23 per cent being from among metal workers), as compared to 90,000 at the end of December 1922. The total number of unemployed in Austria was estimated, at the time mentioned, as being 150,000. In Czechoslovakia at the beginning of January 1923, unemployment was estimated at 420,000, as compared to 330,000 on 1 Dec. 1922, and 267,000 at the beginning of November 1922. The number of employes receiving government benefits was estimated at 190,000.

In Germany there was reported a continued increase in the unemployment among union labor. On 1 Feb. 1923, 252,873 workmen, or 4.4 per cent of the membership were totally unemployed as compared with 2.8 per cent on 1 January. Unions reported that at the end of January 13 per cent of their membership were working on a part time basis.

UNION CHRISTIAN COLLEGE, a co-educational institution, under the auspices of the Christian Church, founded in 1860 and located at Merom, Ind. In 1922-23 it had a faculty of eight members, 92 students, property valued at \$300,000 and an income of \$24,000. W. S. Alexander is president.

UNION COLLEGE, a non-sectarian educational institution for men, founded in 1795 and located at Schenectady, N. Y. Statistics for 1922-23 show a faculty of 60 members, 709 students, property valued at \$2,000,000 and an income of \$300,000. Charles Alexander Richmond, A.M., D.D., LL.D., is president.

UNION UNIVERSITY, a Baptist, co-educational institution founded in 1842 and located at Jackson, Tenn. In 1922-23 it had a faculty of 32 members, 1,000 students, property valued at \$700,000 and an income of \$90,000. Henry E. Watters, D.D., LL.D., is president.

UNION OF SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

UNITARIAN CHURCH. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

UNITED BRETHREN IN CHRIST, Church of the. During 1922, this Church received into membership over 37,000, with a net gain of 10,536, giving the Church a total membership of 374,965. The number of churches at the close of the year was 3,348. The increase in the enrollment in the Sunday schools was 15,677, making a total Sunday school enrollment of 439,066. The increase in the number of Christian Endeavor societies was 239, the Church having 1,636 societies, with a total membership of 101,154, an increase of 8,893. The value of churches and parsonages was \$21,433,862, an increase in valuation of \$882,367. The total contributions for church support and benevolences was \$5,880,968. The principal periodical of the Church is the *Religious Telescope*. Other publications are the *Watchword*, the young people's paper, and the *Evangel*, a missionary monthly. Sunday school publications include: *Boy's Friend*, *Girl's Friend*, *Our Little Folks*, *Otterbein Teacher*, *Advanced Quarterly*, *Youth's Quarterly*, *Junior Quarterly* and *Primary Quarterly*. These have a circulation of approximately 387,000. The Church headquarters and publishing house are located at Dayton, Ohio. The denomination conducts missions in Africa, China, Japan, Philippine Islands, and Porto Rico. Eight educational institutions are maintained, and three homes for the aged and orphans. The Bishops are W. M. Bell, Harrisburg, Pa.; A. R. Clippinger, Dayton, Ohio; H. H. Fout, Indianapolis, Ind.; C. J. Kephart, Kansas City, Mo., and W. H. Washington, Portland, Oregon.

H. F. SHUPE,
Editor, *The Watchword*.

UNITED CONFEDERATE VETERANS. The first reunion of the United Confederate Veterans was held at Chattanooga 3 July 1890. It was the result of a "convention" which was held in New Orleans 10 June 1889 where delegates representing the Confederate Veterans, and their State organizations which were already in existence, met and adopted a "Constitution of the United Confederate Veterans" and likewise elected Gen. John B. Gordon, then Governor of Georgia, General Commanding. This convention was held in response to a call, issued from New Orleans and signed by F. S. Washington as chairman of the general committee, in which ex-Confederate soldiers and sailors were asked to meet at New Orleans 10 June 1889, for the purpose of forming "a federation of associations."

At this first reunion Gen. John B. Gordon, General Commanding, presided and Col. D. A. Given was secretary. It was at this meeting that the United Confederate Veterans placed on record their formal recognition and approval of the patriotic organizations of Sons and Daughters of Confederate Veterans. The strong and patriotic organizations, United Daughters of the Confederacy and the Sons of Confederate Veterans soon followed. The second reunion was held at Jackson, Miss., 2 June 1891 with General Gordon commanding and Col. D. A. Given as secretary. The third reunion was held at New Orleans 8-9 April 1892. Here General Gordon again presided as General Commanding and for the first time in the minutes of the organization, the title "Adjutant General and Chief of Staff" appears. George Moorman was announced as holding these positions. This reunion was perhaps the real birth of the United Confederate Veterans, or rather its emergence from the chrysalis of the earlier organization. There was a huge crowd in attendance and among the distinguished men present were Generals Longstreet, Stephen D. Lee, John B. Gordon, E. Kirby Smith and Senator John W. Daniel of Virginia. Senator Daniel was the orator of the occasion. Following this, reunions have been held at the following cities: Birmingham, Houston, Nashville, Atlanta, Charleston, Louisville, Memphis, Dallas, New Orleans, Memphis, Louisville, New Orleans, Richmond, Birmingham, Memphis, Mobile, Little Rock, Macon, Chattanooga, Jacksonville, Richmond, Birmingham, Washington, D. C., Tulsa, Atlanta, Houston, Chattanooga, Richmond, New Orleans, for the fifth time will entertain the Veterans in 1923.

Gen. John B. Gordon served as Commander-in-Chief from 1889 to 1903. Other Commanders-in-Chief have been: Stephen D. Lee, W. L. Cabell, C. A. Evans, C. W. Gordon, C. Irvine Walker, Bennett H. Young, George P. Harrison, K. M. Van Zandt and Julian S. Carr. Commander-in-Chief in 1922-23. The headquarters of the United Confederate Veterans is in New Orleans. Edgar D. Taylor, of Richmond, Va., was Adjutant-General and Chief-of-Staff in 1922-23.

UNITED STATES OF AMERICA, a Federal Republic of North America, bounded north by Canada, east by the Atlantic Ocean, south by the Gulf of Mexico and the Republic of Mexico, and west by the Pacific Ocean. Con-

tinental United States comprises the Federal District of Columbia and 48 States. The outlying possessions of the United States include the territories of Alaska and Hawaii, the Philippine Islands, Porto Rico, Virgin Islands, Samoa, Guam, Wake and some smaller islands in the Pacific, and the Panama Canal zone. Continental United States has an area of 3,026,789 square miles, while the outlying possessions have a combined area of 716,721 square miles, giving a total area of 3,743,510 square miles. In 1920 the population of Continental United States was 105,710,620; of the outlying possessions the population was 12,148,875, making a grand total of 117,859,495. The population of Continental United States in 1920 included 94,820,915 whites, 10,463,131 negroes, 244,437 Indians, 111,010 Japanese, 61,639 Chinese, 5,603 Filipinos, 2,507 Hindoos, 1,224 Koreans, and 110 Hawaiians. Of the white population in 1920 the total native whites was 81,108,161; native whites of native parentage numbered 58,421,957; native whites of foreign parentage numbered 15,694,539; native whites of mixed parentage numbered 6,991,665, and foreign-born whites numbered 13,712,754. Of the foreign-born white population of 13,712,754, 1,686,102 were Germans, 1,610,109 Italians, 1,400,489 Russians, 1,139,978 Poles, 1,117,878 Canadians, 1,037,233 Irish, 812,828 English, 625,580 Swedes, 575,625 Austrians, 478,383 Mexicans, 397,282 Hungarians, 362,436 Czechoslovakians, 363,862 Norwegians, 254,567 Scotch, 189,154 Danes, 131,766 Hollanders, 118,659 Swiss, 118,569 French, 34,321 from Alsace-Lorraine, 135,068 Lithuanians, 149,824 Finns, 102,823 Rumanians, 175,972 Greeks, 67,453 Portuguese, 67,066 Welshmen, 62,686 Belgians, 169,437 Yugoslavians, 51,900 Syrians, 49,247 Spaniards, 38,984 from the Atlantic Islands, 36,626 Armenians, 26,369 West Indians, exclusive of Porto Rico, 20,929 from Central and South America, 13,801 Australians, 13,242 New Foundlanders, 12,585 Luxemburgians, 10,477 Bulgarians, 5,608 Albanians, 5,284 European Turks, 8,610 Asiatic Turks, 3,202 from Palestine, 2,404 from Asia Minor, etc. Of the population ten years of age and over (82,739,315), 4,931,905 were illiterate, making a percentage of 6.0 as against 7.7 per cent in 1910. Illiterate native whites numbered 1,242,572, or 2 per cent of that class; foreign-born white illiterates numbered 1,763,740, or 13.1 per cent of that class; negro illiterates numbered 1,842,161, or 22.9 per cent of this class. The population in 1920 was housed in 20,697,204 dwellings. The number of families in the country on the date of the census was 24,351,676. The birth rate is estimated at 22.3 per thousand population and the death rate at 14.2 per thousand. The marriage rate per ten thousand is 105. The divorce rate per ten thousand is 112. The centre of the United States population in 1920 was in north latitude 39° 10' 21" and west longitude 86° 43' and 15". This point is 1.9 miles west of Whitehall, Clay township, Owen County, Indiana. During the decade from 1910 to 1920 the centre of population shifted 9.8 miles from point to point in direct line and westward 9.8 miles and 0.2 miles northward. The percentage of increase of the population from 1910 to 1920 was 18.6 for native whites, and 2.8 for foreign-born whites. The percentage for all

whites was 16 and for negroes 6.5. In 1920 there were in the United States 25 cities having a population of 250,000 or more and with a combined population of 20,910,139. There were 43 cities of from 100,000 to 250,000 with a combined population of 6,519,187. There were 76 cities of from 50,000 to 100,000 and with a combined population of 5,265,947. There were 143 cities of from 25,000 to 50,000 and with a combined population of 5,075,041. This makes a total of 287 cities of 25,000 and over with a combined population of 37,770,114. The Federal capital of the United States is Washington, D. C., which in 1920 had a population of 437,571. The principal cities of the United States, with their populations in 1920, are: New York, 5,620,048—Boroughs, Manhattan, 2,284,103; Bronx, 732,016; Brooklyn, 2,018,356; Queens, 469,042; Richmond, 116,531. Chicago, Ill., 2,701,705; Philadelphia, Pa., 1,823,779; Detroit, Mich., 993,678; Cleveland, Ohio, 796,841; Saint Louis, Mo., 772,897; Boston, Mass., 748,060; Baltimore, Md., 733,826; Pittsburgh, Pa., 588,343; Los Angeles, Calif., 576,673; Buffalo, N. Y., 506,775; San Francisco, Calif., 506,676; Milwaukee, Wis., 457,147; Washington, D. C., 437,571; Newark, N. J., 414,524; Cincinnati, Ohio, 401,247; New Orleans, La., 387,219; Minneapolis, Minn., 380,582; Kansas City, Mo., 324,410; Seattle, Wash., 315,312; Indianapolis, Ind., 314,194; Jersey City, N. J., 298,103; Rochester, N. Y., 295,750; Portland, Oregon, 258,288; Denver, Colo., 256,491; Toledo, Ohio, 243,164; Providence, R. I., 237,595; Columbus, Ohio, 237,031; Louisville, Ky., 234,891; Saint Paul, Minn., 234,698; Oakland, Calif., 216,261; Akron, Ohio, 208,435; Atlanta, Ga., 200,616; Omaha, Neb., 191,601; Worcester, Mass., 179,754; Birmingham, Ala., 178,806; Syracuse, N. Y., 171,717; Richmond, Va., 171,667; New Haven, Conn., 162,537; Memphis, Tenn., 162,351; San Antonio, Texas, 161,379; Dallas, Texas, 158,976; Dayton, Ohio, 152,559; Bridgeport, Conn., 143,555; Houston, Texas, 138,276; Hartford, Conn., 138,036; Scranton, Pa., 137,783; Grand Rapids, Mich., 137,634; Paterson, N. J., 135,875; Youngstown, Ohio, 132,358; Springfield, Mass., 129,614; Des Moines, Iowa, 126,468; New Bedford, Mass., 121,217; Fall River, Mass., 120,485; Trenton, N. J., 119,289; Nashville, Tenn., 118,342; Salt Lake City, Utah, 118,110; Camden, N. J., 116,309; Norfolk, Va., 115,777; Albany, N. Y., 113,344; Lowell, Mass., 112,759; Wilmington, Del., 110,168; Cambridge, Mass., 109,694; Reading, Pa., 107,784; Fort Worth, Texas, 106,482; Spokane, Wash., 104,437; Kansas City, Kans., 101,177; Yonkers, N. Y., 100,176; Lynn, Mass., 99,148; Duluth, Minn., 98,917; Tacoma, Wash., 96,965; Elizabeth, N. J., 95,783; Lawrence, Mass., 94,270; Utica, N. Y., 94,156; Erie, Pa., 93,372; Somerville, Mass., 93,091; Waterbury, Conn., 91,715; Flint, Mich., 91,599; Jacksonville, Fla., 91,558; Oklahoma City, Okla., 91,295; Schenectady, N. Y., 88,723; Canton, Ohio, 87,091; Fort Wayne, Ind., 86,549; Evansville, Ind., 85,264; Savannah, Ga., 83,252; Manchester, N. H., 78,384; Saint Joseph, Mo., 77,939; Knoxville, Tenn., 77,818; El Paso, Texas, 77,560; Bayonne, N. J., 76,754; Peoria, Ill., 76,121; Harrisburg, Pa., 75,917; San Diego, Calif., 74,683; Wilkesbarre, Pa., 73,833; Allentown, Pa., 73,502; Wichita, Kans.,

72,217; Tulsa, Okla., 72,075; Troy, N. Y., 72,013; Sioux City, Iowa, 71,227; South Bend, Ind., 70,983; Portland, Me., 69,272; Hoboken, N. J., 68,166; Charleston, S. C., 67,957; Johnstown, Pa., 67,327; Binghamton, N. Y., 66,800; East Saint Louis, Ill., 66,767; Brockton, Mass., 66,254; Terre Haute, Ind., 66,083; Sacramento, Calif., 65,908; Rockford, Ill., 65,651; Little Rock, Ark., 65,142; Pawtucket, R. I., 64,248; Passaic, N. J., 63,841; Saginaw, Mich., 61,903; Springfield, Ohio, 60,840; Mobile, Ala., 60,777; Altoona, Pa., 60,331, and Holyoke, Mass., 60,203.

Religion.—For statistics and other information relative to the various religious denominations in the United States see the articles on the principal denominations and the article **CHRISTIAN CHURCH IN THE UNITED STATES, STATISTICS OF THE**.

Education.—Each State has a free public school system maintained by public funds. In most States the work of these primary schools is supplemented by private and parochial schools. In the newer States the Federal government has set aside from two to four sections in each township six miles square, the proceeds from the sale of which form the chief part of the permanent school funds of those States, the income alone being used to support the schools and being supplemented by taxation either State or local. In a recent year it was estimated that the amount expended on public schools of elementary and secondary grades was \$644,595,145. For further information relative to education see **EDUCATION, UNITED STATES BUREAU OF**, and articles on the several States and **EDUCATION, PROGRESS IN**. See also **SCHOOL OFFICERS, STATE**; and articles on the more important colleges and universities, Columbia, Chicago, Harvard, Princeton, etc.

Outlying Possessions.—For the outlying possession of the United States of America see the articles **ALASKA, GUAM, HAWAII, PHILIPPINES, PORTO RICO, VIRGIN ISLANDS OF THE UNITED STATES**, etc. See also **CUBA, HAITI**, etc., for countries with which the United States government has closer relations than ordinary.

Agriculture.—For a detailed discussion of this subject see **AGRICULTURE IN THE UNITED STATES**. See also **AGRICULTURE, UNITED STATES DEPARTMENT OF**; **CO-OPERATIVE MOVEMENT**; **DAIRY PRODUCTS, VALUE OF, IN THE UNITED STATES**; **FARM PRODUCTS**; **POULTRY**; **FOOD STANDARDS, FEDERAL**; **HORTICULTURE**; **LIVING, COST OF**; **FOREST SERVICE, UNITED STATES**; also articles on special crops, **COTTON, CORN, WHEAT**, etc.; and sections in the articles on the various States dealing with Agriculture, in which the area, crop yield, and value of the chief crops in 1922 are given.

Manufactures.—In this volume all the principal industries are treated under their own headings. See **AUTOMOBILES**; **BOOT AND SHOE INDUSTRY**; **CANDY AND CONFECTIONERY**; **CANNING AND PRESERVING**; **IRON AND STEEL**; **PAPER**; **PRINTING**; **RUBBER**; **SHIPBUILDING**; **SILK INDUSTRY**; **TEXTILE INDUSTRY**; etc.

Mineral Production.—The general industrial depression that began late in 1920 continued throughout 1921, although improvement in some industries began late in the year. This improvement became more marked in 1922; but the mining industry as a whole lacked stability and

in the summer of 1922 was affected by the most widespread coal strike in the country's history, added to which, and aggravating the situation, of the railway shopmen, which almost paralyzed freight movement for several weeks. For information as to the production in 1922 of the more important minerals, see **COAL, COPPER, GOLD, IRON (AND STEEL), LEAD AND ZINC, SILVER**, etc. See also subsections on Minerals in the articles on the several States and Territories.

The table on pages 844 and 845, compiled by the United States Geological Survey, shows the quantity and value of mineral products in the United States in 1920 and 1921, the last year for which complete figures are available.

Commerce, Foreign.—During the 12 months ending 30 June 1922, the foreign trade of the United States suffered in common with the general world depression, according to the Annual Report of the Department of Commerce for the fiscal year 1921-22. The monetary value of United States exports and imports during the period in question, in comparison with the previous fiscal year, is shown in the following table:

	1920-21	1921-22
Imports.....	\$3,654,459,346	\$2,608,079,008
Exports.....	6,516,510,033	3,771,286,428
Total foreign trade.....	\$10,170,969,379	\$6,379,365,436
Balance of exports over imports.....	2,862,050,687	1,163,207,420

The fall in the monetary value of imports was therefore 28.6 per cent, in exports 42.1 per cent, and in total trade 37.3 per cent. The great decline in value from the previous year was due in a large degree to a fall in prices rather than in quantities, as indicated by the table of quantity movements of larger commodities. From this table it will be seen that our agricultural exports were actually larger in quantity during the year of depression, although they decreased in value by about \$700,000,000. A study of the whole export and import list, so far as quantitative statistics are available, indicates that, roughly, our trade in 1922, if it was valued at 1921 prices, would have shown a decrease in exports of 12 per cent, an increase in imports of 29 per cent, or an increase in total trade of about 2.7 per cent. The report continues with some interesting observations regarding invisible items of exchange. It says:

"The influence of the balance of invisible exchange in our whole trade and financial relationships is of growing importance. It is possible to estimate roughly some elements in invisible exchanges, such as public issues of foreign loans, tourist traffic, remittances of immigrants, and freights; but other items, such as private loans, reciprocal interest payments, investments, and loss by speculation in foreign currencies, are unknowable factors. Foreign loans were issued publicly during the fiscal year to the amount of \$1,015,000,000, as compared with \$618,000,000 during the previous year. What the ebb and flow of private loans may have been is, of course, unknown. It would appear that the net balance of the other items against us amounted to a minimum of from \$400,000,000 to \$500,000,000 a year. In any event, the invisible exchange against us could

MINERAL PRODUCTS OF THE UNITED STATES IN 1920 AND 1921¹

PRODUCT	1920		1921	
	Quantity	Value	Quantity	Value
METALLIC				
Aluminum, pounds.....		\$41,375,000		\$10,906,000
Antimonial lead, short tons (2,000 pounds) ²	12,535	1,963,255	10,064	870,059
Antimony, pounds ³	2,785	473,450	1,589	137,629
Bauxite, long tons (2,240 pounds).....	521,308	3,247,345	139,550	889,800
Cadmium, pounds.....	129,283	151,261	65,101	63,799
Chromite, long tons.....	2,502	44,857	282	2,900
Copper, ⁴ sales value, pounds.....	1,209,061,040	222,467,000	505,586,098	65,221,000
Ferroalloys, long tons.....	612,808	77,519,367	(⁵)	(⁵)
Gold, troy ounces ⁶	2,476,166	51,186,900	2,422,006	50,067,300
Iron:				
Ore, long tons ⁷	69,281,341	7285,006,327	26,652,528	789,745,308
Pig, long tons.....	35,710,227	1,140,904,096	16,000,000	394,000,000
Lead (refined), ⁴ sales value, short tons.....	476,849	76,296,060	398,222	35,840,000
Manganese ore (35 per cent or more Mn) long tons.....	94,420	2,396,235	13,531	495,097
Manganiferous ore (5 to 35 per cent Mn), long tons ⁸	767,664	2,437,798	97,099	255,131
Nickel, value at New York City, short tons.....	365	293,250	111	86,000
Ores (crude):				
Copper, short tons.....	36,765,000	(⁹)	(¹⁰)	(⁹)
Copper-lead and copper-lead-zinc, short tons.....	27,000	(⁹)	(¹⁰)	(⁹)
Dry and siliceous (gold and silver), short tons.....	8,589,000	(⁹)	(¹⁰)	(⁹)
Lead, short tons.....	7,201,000	(⁹)	(¹⁰)	(⁹)
Lead-zinc, short tons.....	12,383,000	(⁹)	(¹⁰)	(⁹)
Zinc, short tons.....	2,651,000	(⁹)	(¹⁰)	(⁹)
Platinum and allied metals (value at New York City), troy ounces.....	41,544	4,697,722	56,370	4,238,989
Quicksilver (value at San Francisco), flasks (75 pounds net).....	13,392	1,066,807	6,339	300,590
Quicksilver ore, short tons.....	109,000	(⁹)	35,000	(⁹)
Silver, troy ounces.....	55,361,573	60,801,955	53,052,441	53,052,441
Tin (metallic equivalent), short tons.....	22	22,000	4	2,400
Titanium ore (rutile), short tons.....	277	(¹¹)		
Tungsten ore (60 per cent concentrates), short tons.....	216	101,800		
Uranium and vanadium ores, short tons.....	35,076	2,401,000	8,540	876,000
Zinc, ⁴ sales value, short tons.....	450,045	72,907,000	198,232	19,823,000
Total value of metallic products (approximate).....		\$1,762,350,000		\$657,540,000
NONMETALLIC				
Arsenious oxide, short tons.....	11,502	\$2,021,356	4,786	\$717,700
Asbestos, short tons.....	1,648	678,231	831	336,968
Asphalt, short tons.....	898,993	13,199,365	920,632	11,033,804
Barytes (crude), short tons.....	228,113	2,142,464	66,369	531,958
Borates, short tons.....	120,320	2,173,000	50,000	1,600,000
Bromine, pounds.....	1,160,584	745,381	711,953	172,759
Calcium-magnesium chloride, short tons.....	27,849	539,471	23,672	510,723
Cement, barrels (376 pounds net).....	97,079,200	195,589,915	95,820,997	178,981,533
Clay:				
Products.....		373,670,102		(¹²)
Raw, short tons ⁷	3,116,212	711,614,288	1,716,746	76,025,300
Coal:				
Bituminous, short tons ¹³	568,666,683	2,129,933,000	406,925,000	1,237,000,000
Pennsylvania anthracite, long tons.....	79,998,437	434,252,198	80,779,867	452,304,903
Coke, short tons ⁷	51,345,043	7494,246,254	25,479,000	(⁷ , ⁹)
Diatomaceous (infusorial), earth and tripoli, short tons.....	102,155	1,649,370	67,474	895,629
Emery, short tons.....	2,327	21,685	305	2,250
Feldspar (crude), short tons.....	151,817	851,123	102,889	617,652
Fluorspar, short tons.....	186,778	4,718,547	34,960	724,094
Fuller's earth, short tons.....	128,487	2,506,189	105,609	1,973,848
Garnet for abrasive purposes, short tons.....	5,476	434,425	3,048	260,687
Gems and precious stones.....		265,205		518,280
Graphite:				
Amorphous, short tons.....	4,694	49,758	1,842	20,860
Crystalline, pounds.....	9,632,360	576,444	1,189,523	75,664
Grindstones and pulpstones, short tons.....	53,484	1,707,004	26,340	1,227,322
Gypsum, short tons.....	3,129,142	24,533,065	3,050,984	23,700,290
Lime, short tons.....	3,570,141	37,543,840	2,531,000	24,536,000
Magnesite (crude), short tons.....	303,767	2,748,150	47,904	510,177
Mica:				
Scrap, short tons.....	5,723	167,017	2,577	56,849
Sheet, pounds.....	1,683,480	546,972	741,845	118,513
Millstones.....		63,325		24,524
Mineral paints:				
Natural pigments, short tons ¹⁴	(¹⁴)	(¹⁴)	(¹⁴)	(¹⁴)
Zinc and lead pigments, short tons ¹⁵	143,244	24,564,572	102,463	14,801,032
Mineral waters, gallons sold.....	36,218,260	4,860,915	32,000,000	3,750,000
Natural gas, M cubic feet.....	798,210,000	166,259,000	807,670,000	200,302,000
Natural-gas gasoline, gallons.....	384,743,922	71,788,122	473,658,500	65,717,900
Oilstones, etc., short tons.....	1,144	231,747	831	123,777
Peat, short tons.....	73,204	921,732	30,406	260,119
Petroleum, barrels (42 gallons).....	442,929,000	1,360,745,000	469,639,000	753,300,000

MINERAL PRODUCTS OF THE UNITED STATES IN 1920 AND 1921¹ — *Continued*

PRODUCT	1920		1921	
	Quantity	Value	Quantity	Value
Phosphate rock, long tons.....	4,103,982	\$25,079,572	2,064,025	\$12,270,070
Potash (K ₂ O), short tons.....	41,444	7,463,026	4,408	447,859
Pumice, short tons.....	41,838	114,433	37,108	158,540
Pyrites, long tons.....	310,777	1,596,961	157,118	711,432
Salt, short tons.....	6,840,029	29,894,075	4,981,154	24,557,966
Sand:				
Glass, short tons.....	2,165,926	4,748,690	1,256,000	2,273,000
Molding, building, etc., and gravel, short tons.....	79,875,462	60,912,915	75,093,000	50,302,000
Sand-lime brick, thousands.....	169,761	2,490,283	(¹⁶)	(¹⁶)
Silica (quartz), short tons.....	68,190	320,350	11,252	84,957
Slate.....		8,726,442		7,322,006
Stone, short tons.....	78,527,000	133,541,960	62,400,000	92,500,000
Sulphur, long tons.....	1,517,625	30,000,000	954,344	17,000,000
Sulphur acid (60° Baumé) from copper and zinc smelters, short tons.....	¹⁷ 1,229,508	13,617,075	(¹⁸)	(¹⁸)
Talc and soapstone, short tons.....	210,635	3,035,449	126,434	1,821,451
Thorium minerals (monazite), pounds.....	(¹⁹)	(¹⁹)	(¹⁹)	(¹⁹)
Total value of nonmetallic products (approximate).....		\$5,184,240,000		\$3,395,460,000
SUMMARY				
Total value of metallic products.....		\$1,762,350,000		\$657,540,000
Total value of nonmetallic products (exclusive of mineral fuels).....		1,021,260,000		686,830,000
Total value of mineral fuels.....		4,162,980,000		2,708,630,000
Total value of "unspecified" (metallic and non-metallic) products (partly estimated).....		4,820,000		²⁰ 3,000,000
GRAND TOTAL APPROXIMATE VALUE OF ALL MINERAL PRODUCTS.....		\$6,951,410,000		\$4,056,000,000

¹ In this general statement certain of the figures represent shipments rather than quantity mined, and some of the figures for 1921 are estimates.

² From both domestic and foreign ores.

³ From all sources. Values excluded from metallic totals as the values of the antimony contained in antimonial lead are included in the antimonial lead values, and the remainder under last item ("Unspecified").

⁴ Product from domestic ores only.

⁵ Figures not yet available; producers' reports for 1921 being received through Bureau of the Census; estimate of value included in total value of metallic products.

⁶ Value, \$20,671,834,625,323 an ounce.

⁷ Value not included in total value.

⁸ Including ore used for fluxing.

⁹ Figures showing values not available.

¹⁰ Figures for 1921 not yet available.

¹¹ Value included in total value of metallic products. Survey not at liberty to publish figures.

¹² Figures not yet available; canvass being conducted by Bureau of the Census; estimate of value included in total value of nonmetallic products.

¹³ Includes brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

¹⁴ Canvass continued after 1915. Value of iron ore sold for paint included under last item ("Unspecified").

¹⁵ Sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc oxide.

¹⁶ Figures not yet available; canvass being conducted by Bureau of the Census; estimate of value included in total value of nonmetallic products.

¹⁷ Includes 23,728 tons of stronger acid, not converted to 60° Baumé.

¹⁸ Value included under last item ("Unspecified"). Survey not at liberty to publish figures.

¹⁹ Figures not yet available. Estimate of value included under last item ("Unspecified").

²⁰ Includes in 1921 the value of the following products: Bismuth, cadmium sulphide, chata, columbite, flint lining for tube mills, iron ore sold for paint, lithium minerals, marls, pebbles for grinding, selenium, silica sand and sandstone (finely ground), sodium salts (sodium carbonate, sodium sulphate, trona, and borax) from natural sources, tellurium, and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Survey.

be approximated at not less than \$1,000,000,000 or \$1,100,000,000 in 1920-21 and about \$1,400,000,000 or \$1,500,000,000 in 1921-22.

"The balance of goods in our favor drew a net amount of \$449,000,000 in gold and silver during the fiscal year 1922, as compared with \$511,000,000 during the previous year.

"For the year 1920-21 the excess of export goods over imports, that is, the total trade balance of \$2,862,000,000, was liquidated in part by \$511,000,000 in precious metals shipped to us, and in part by invisible exchange of, say, \$1,100,000,000, leaving an apparently unliquidated balance of about \$1,200,000,000 to \$1,300,000,000 for that fiscal year. A study of the banking returns of unfunded foreign ad-

vances at this time does not bear out the conclusion that such an amount of private financing of exports, as indicated above, was ever undertaken, and thus the probabilities are that the speculative losses in European currencies and other investments and other forms of invisible exchange were even larger than has been estimated.

"For the year 1921-22 the excess of exports over imports of \$1,163,000,000 was liquidated in part by \$449,000,000 net imports of precious metals, and this together with the additional estimated balance against us of \$1,500,000,000 of invisible exchange, exceeds the amount necessary to square accounts by some \$750,000,000. No doubt this was at least partly absorbed in

repayment of private loans because even a smaller amount of private export financing existed in July 1922, than in July 1921. Generally this change indicates a much sounder and firmer basis of trade.

"The gold situation in the world is a matter of a great deal of economic thought and no doubt the heavy drain to America has contributed to the instability of foreign currencies, not only by the diminution of their essential guaranties, but also by their fluctuation involved in liquidating trade balances in this fashion. Our gold stocks amount to about \$3,077,000,000. Of this, the minimum legal necessities at the moment for assurances to our currency and credits amount roughly to about \$1,600,000,000, but for a 60 per cent reserve of security, we would require about \$2,400,000,000. Therefore, our surplus amounts to something over \$700,000,000. While this is an asset, it nevertheless would be more advantageous to us if it were in active use. The automatic tendencies in our international trade and financial relations are, however, setting strongly toward rectification of this whole situation without artificial action.

"There is a steady increase in the ratio of imports to exports of goods, as indicated by the decrease in the average monthly balance in our favor over the last two and one-quarter years during which our trade balances have been as follows:

	Average monthly balance in our favor
Six months, 1 July to 30 December, 1920...	\$274,674,811
Six months, 1 January to 1 July, 1921.....	202,333,636
Six months, 1 July to 30 December, 1921....	126,980,328
Six months, 30 December to 1 July, 1922....	66,887,576
Three months, 1 July to 1 October, 1922.....	51,623,542

"At this rate we would, theoretically, reach a balance in the movement of goods in another few months. However, economic movements do not proceed on time schedules, although their trends are no less positive. Many uncertain factors naturally affect commodity movements and but little beyond tendencies can be noted. It would, at least, appear that the invisible exchange is certainly able to take care of commodity balances, and that we are reaching the end of the gold import stage of war readjustments. Continued trend in the general direction now evident would soon produce gold exports even in the face of payments on account of Allied debts.

"There have been several important shifts in our foreign trade due to the war. The export of foodstuffs has immensely increased, due partially to the demoralization of Russia. There is at best no probability of Russian exports of large volume for another two or three years, not only because of the condition of agriculture but also because of the demoralization of her railways. There has been a decrease in raw cotton exports, due to various causes, chiefly short production, but partly due to steady increase in our cotton manufactures.

"The following table shows the quantitative movement of major agricultural exports, pre-war and for the last fiscal year:

	1913	1922
Grain and grain products (bus).....	258,343,629	544,220,964
Meats, dairy products, animal and vegetable fats (lbs).....	1,610,053,715	2,192,174,236
Tobacco, leaf (lbs).....	418,796,906	451,555,221
Cotton, raw (bales).....	8,724,572	6,541,841
Fruits (lbs).....	620,423,027	491,227,140
Oil cake and meal (lbs).....	2,049,361,136	1,099,246,797
Total values.....	\$1,029,967,344	\$1,557,372,997
Total values at 1913 prices	\$1,029,967,344	\$1,168,521,140

"About 55 per cent of our total exports are agricultural produce and raw materials and 45 per cent are manufactured and partly manufactured goods (excluding manufactured foodstuffs).

"About 75 per cent of our exports of agricultural produce and raw materials go to Europe and about 25 per cent to the rest of the world.

"About 26 per cent of our manufactured goods go to Europe and 74 per cent elsewhere.

"Our exports of agricultural produce comprise, roughly, 15 per cent of the entire crop value on the farm, while our exports of manufactured goods comprise less than 4 per cent of our production. Our exports of agricultural produce to Europe comprise 11 per cent of the value of our agricultural production, and less than 1 per cent of our manufactured production.

"The last fact has much to do with our ability to shake loose from European economic currents in the manufacturing industries and with the strengthening of employment in our home industries, we will, no doubt increase home consumption in agricultural products.

"A pronounced shift in our foreign trade during the past few years is the increasing ratio of imports from tropical countries. A study of this situation reveals that over one-half of our imports are of tropical origin (rubber, sugar, coffee, woods and so forth), as against about one-third of such imports before the war. The balance of trade is heavily against us in the tropics as a whole. A study of the trade of these particular countries indicates that the excess of our imports from those areas over our exports to them is about \$500,000,000 per annum, which is largely used by them for the purchase of manufactured goods from Europe, thus to a considerable extent liquidating the excessive balance in our favor in our European trade created by shipping to Europe our agricultural produce. This triangular operation seems likely to increase, as tropical goods do not materially conflict with our own production, and our consumption of these commodities is likely to increase steadily."

The several tables given herewith show the remarkable changes in the foreign trade record of the United States during and since the World War.

A tabulation showing the foreign commerce of the United States from 1790 to 1919, prepared by the author of the table which follows appears on page 501 of Vol. 27 of the new 'Encyclopedia Americana.' In view of the fact that the period beginning with the great European war shows remarkable changes in the record of

our trade with other countries it has been deemed proper, in presenting the figures of the recent years to include those of each fiscal year beginning with the year ending 30 June 1914, all of which preceded the beginning of the war.

IMPORTS AND EXPORTS OF MERCHANDISE INTO AND FROM THE UNITED STATES, 1914-1922

(Compiled by O. P. Austin, Statistician, National City Bank of New York)

FISCAL YEARS ENDING JUNE 30	Total imports	Total exports, including foreign mdae. re-exported
1914.....	\$1,893,926,000	\$2,329,684,000
1915.....	1,674,170,000	2,716,178,000
1916.....	2,197,884,000	4,272,178,000
1917.....	2,659,355,000	6,227,164,000
1918.....	2,946,655,000	5,838,652,000
1919.....	3,095,720,000	7,232,283,000
1920.....	5,238,352,000	8,108,989,000
1921.....	3,654,459,000	6,516,510,000
1922.....	2,608,009,000	3,771,182,000

During the fiscal year 1921-22 exports showed a decrease to almost every country, but in the month of June 1922 registered substantial increases everywhere, except into Mexico and a few South American countries. This was taken to indicate that our foreign trade had reached the end of its downward trend and had begun to climb upward.

For the fiscal year ended 30 June 1922, the total value of exports was \$3,771,181,000 as compared with \$6,516,510,000 in 1921. Imports for the same period were valued at \$2,608,009,000 as compared with \$3,654,459,000 in 1921. However, this upward trend was not sufficient to bring up the total trade for the calendar year to the level of that for 1921, as shown by the following tables, compiled by the United States Department of Commerce, giving the total values of exports and imports by grand divisions and principal countries for the calendar years 1921 and 1922.

Grand divisions	EXPORTS	
	1921	1922
Europe.....	\$2,363,898,936	\$2,083,417,290
North America.....	1,129,579,244	915,651,451
South America.....	273,325,393	226,074,981
Asia.....	532,614,780	449,066,030
Oceania.....	112,766,453	101,945,592
Africa.....	72,846,550	55,776,849
Total.....	\$4,485,031,356	\$3,831,932,193

Principal countries		
Belgium.....	\$117,867,602	\$101,529,759
Denmark.....	39,508,648	35,572,483
France.....	224,920,707	266,964,931
Germany.....	372,380,232	316,113,877
Greece in Europe.....	29,376,353	11,132,947
Italy.....	215,462,901	150,895,683
Netherlands.....	170,879,158	117,806,200
Norway.....	32,117,312	31,242,518
Russia in Europe.....	14,187,850	19,684,533
Spain.....	69,197,443	70,931,175
Sweden.....	37,565,813	32,475,343
Switzerland.....	7,741,662	4,624,360
United Kingdom.....	942,114,454	855,880,355
Canada.....	593,676,507	576,683,789
Central America.....	55,084,516	44,791,244
Mexico.....	221,850,424	109,884,917
Cuba.....	187,727,179	127,873,202
Dominican Republic.....	19,343,811	10,234,642
Argentina.....	110,835,549	95,542,383
Brazil.....	58,106,414	43,246,691
Chile.....	26,487,166	22,464,102
Colombia.....	17,733,762	20,136,708
Peru.....	24,028,627	14,036,990
Uruguay.....	13,773,361	11,419,076
Venezuela.....	9,498,257	8,664,189
China.....	108,290,435	100,347,041
British India.....	56,769,898	30,736,801
Straits Settlements.....	7,458,302	5,623,206

Principal countries	EXPORTS—(Continued)	
	1921	1922
Dutch East Indies.....	32,340,408	8,096,203
Japan.....	235,423,679	218,510,111
Philippine Islands.....	46,516,049	43,298,142
Australia.....	82,756,378	80,520,340
New Zealand.....	28,071,813	19,967,225
British South Africa.....	25,351,390	20,909,824
Egypt.....	13,704,244	7,966,995

Grand divisions	IMPORTS	
	1921	1922
Europe.....	764,942,003	991,398,734
North America.....	754,849,122	822,459,529
South America.....	295,622,950	358,748,358
Asia.....	517,862,207	826,467,816
Oceania.....	35,498,766	48,516,791
Africa.....	40,372,522	64,957,544
Total.....	\$2,509,147,570	\$3,112,548,772

Principal countries		
Belgium.....	\$35,242,501	\$53,909,160
Denmark.....	8,854,986	4,161,652
France.....	141,885,117	142,808,898
Germany.....	80,279,943	117,493,372
Greece in Europe.....	21,737,200	21,232,269
Italy.....	62,289,880	63,930,031
Netherlands.....	45,226,179	63,794,944
Norway.....	13,005,048	14,727,062
Russia in Europe.....	138,648	266,235
Spain.....	26,159,927	28,668,681
Sweden.....	19,765,767	33,390,934
Switzerland.....	41,315,877	38,923,598
United Kingdom.....	238,796,638	356,927,197
Canada.....	335,441,004	364,026,424
Central America.....	33,467,255	31,148,967
Mexico.....	119,290,133	132,087,844
Cuba.....	230,351,908	267,840,867
Dominican Republic.....	14,414,142	4,842,498
Argentina.....	59,925,960	85,677,952
Brazil.....	96,326,200	120,382,816
Chile.....	46,935,143	59,714,457
Colombia.....	43,976,205	36,064,459
Peru.....	14,733,239	15,872,125
Uruguay.....	12,512,249	16,502,049
Venezuela.....	11,295,159	13,929,606
China.....	101,135,911	134,609,105
British India.....	78,188,776	91,151,961
Straits Settlements.....	56,797,261	93,350,441
Dutch East Indies.....	32,141,773	34,424,253
Japan.....	251,267,660	354,298,198
Philippine Islands.....	52,161,812	61,743,430
Australia.....	22,820,976	35,782,464
New Zealand.....	9,839,291	10,435,865
British South Africa.....	7,893,888	8,224,311
Egypt.....	22,013,469	35,409,791

The following tables give an analysis of the foreign commerce of the United States for the calendar years 1921 and 1922.

	EXPORTS	
	1921	1922
Crude materials for use in manufacturing.....	\$983,962,354	\$981,357,279
Foodstuffs, crude, and food animals.....	692,248,671	458,353,860
Foodstuffs partly or wholly manufactured.....	669,665,598	588,242,722
Manufactures for further use in manufacturing.....	399,236,948	437,764,031
Manufactures ready for consumption.....	1,625,967,456	1,292,373,412
Miscellaneous.....	7,846,997	7,100,831
Total domestic exports.....	\$4,378,928,024	\$3,765,192,135

	IMPORTS	
	1921	1922
Crude materials for use in manufacturing.....	\$853,048,000	\$1,161,728,000
Foodstuffs, crude, and food animals.....	304,135,000	329,817,100
Foodstuffs partly or wholly manufactured.....	368,841,000	388,287,000
Manufactures for further use in manufacturing.....	344,059,000	550,246,000
Manufactures ready for consumption.....	619,043,000	663,651,000
Miscellaneous.....	20,022,000	18,820,000
Total imports.....	\$2,509,148,000	\$3,112,549,000

The following table shows the values of the principal commodities entering into the foreign commerce of the United States for the fiscal year ending 30 June 1922:

EXPORTS	
[Values in thousands of dollars; three ciphers omitted.]	
COMMODITIES	Total fiscal year 1922
Animals and animal products, except wool and hair (total).....	\$429,907
Animals.....	\$14,972
Meats.....	131,953
Dairy products.....	36,375
Fish.....	16,846
Lard and neutral lard.....	97,428
Lard compounds containing animal fats.....	3,515
Oleo oil.....	12,367
Hides and skins, except furs.....	4,573
Leather.....	41,245
Leather manufactures.....	17,648
Furs and manufactures of.....	24,014
Vegetable food products, oil seeds, expressed oils, and beverages (total).....	\$812,824
Corn.....	\$115,862
Wheat.....	
Grain.....	279,656
Flour.....	97,386
Other grains and preparations of.....	98,391
Oil cake and oil-cake meal.....	22,771
Vegetables.....	18,044
Fruits and nuts.....	
Canned fruits.....	16,368
Other fruits and nuts.....	50,260
Vegetable oils, expressed, and fats.....	13,455
Sugar.....	77,447
Glucose (corn syrup).....	6,110
Other vegetable products, except fibers and wood (total).....	\$251,501
Rubber manufactures.....	\$31,024
Naval stores, gum, and resins.....	15,232
Leaf tobacco.....	156,729
Manufactures of tobacco.....	23,563
Starch.....	8,199
Hops.....	4,852
Textiles (total).....	\$764,268
Cotton, unmanufactured.....	\$596,379
Cotton cloth.....	76,935
Cotton wearing apparel.....	18,528
Other manufactures of cotton.....	27,475
Binder twine.....	7,234
Wool and hair, manufactures of.....	7,037
Silk, manufactures of.....	10,163
Wood and paper (total).....	\$130,045
Boards, planks, and scantlings.....	\$52,677
Other wood and manufactures of.....	36,437
Paper, except printed matter.....	20,669
Books, maps, pictures, and other printed matter.....	17,328
Nonmetallic minerals (total).....	\$471,156
Anthracite coal.....	\$32,201
Bituminous coal.....	67,915
Petroleum, crude.....	16,366
Gasoline, naphtha, and other light products.....	117,630
Illuminating oil.....	76,389
Gas and fuel oil.....	32,099
Lubricating oil.....	78,110
Paraffin wax.....	9,006
Glass and glass products.....	8,727
Clay and clay products.....	5,320
Sulphur or brimstone.....	6,070
Ores, metals, and manufactures of, except machinery and vehicles (total).....	\$312,358
Iron and steel plates, sheets, skelp, and strips.....	\$49,078
Structural iron and steel.....	9,495

COMMODITIES — (Continued)		Total fiscal year 1922
Ores, metals, etc. — (Continued)		
Railway-track material—Rails.....		\$10,306
Tubular products and fittings.....		21,297
Wire and manufactures of.....		13,438
Other iron and steel and manufactures of.....		78,183
Refined copper in ingots, bars, or other forms.....		88,780
Other copper and manufactures of.....		12,370
Brass and bronze.....		6,042
Machinery and vehicles (total).....		\$345,725
Locomotives.....		\$18,134
Electrical machinery and apparatus.....		57,153
Metal-working machinery.....		11,239
Textile machinery.....		17,469
Agricultural machinery and implements.....		19,056
Automobiles, including chassis.....		42,899
Other vehicles.....		56,849
Chemicals and allied products (total).....		\$100,519
Chemicals.....		\$50,260
Pigments, paints, and varnishes.....		10,069
Fertilizers and fertilizer materials.....		17,003
Miscellaneous (total).....		\$81,564
Photographic goods, except paper.....		\$16,918
Musical instruments.....		7,488
TOTAL VALUE OF DOMESTIC MERCHANDISE.....		\$3,699,867

IMPORTS	
[Values in thousands of dollars; three ciphers omitted.]	
COMMODITIES	
Silk, unmanufactured.....	\$307,283
Sugar, cane.....	200,773
Coffee, crude.....	148,503
Wood and manufactures of.....	127,737
Chemicals, drugs, dyes, and medicines.....	97,481
Fruits and nuts.....	89,865
India rubber and similar gums, crude.....	88,839
Cotton, manufactures of.....	88,196
Fibers, etc., manufactures of.....	87,229
Mineral oils.....	85,801
Paper.....	85,121
Hides and skins (except fur skins).....	78,899
Tobacco and manufactures of.....	63,249
Articles, the growth, etc., of the United States, returned.....	61,552
Vegetable oils.....	52,928
Furs and fur skins, undressed.....	48,692
Precious stones.....	47,232
Wool, unmanufactured.....	45,649
Copper and manufactures of.....	45,018
Cotton, unmanufactured.....	43,958
Wool, manufactures of.....	43,333
Silk, manufactures of.....	40,338
Seeds.....	39,896
Meat and dairy products.....	32,443
Iron and steel and manufactures.....	29,661
Fish.....	29,368
Tin, bars, blocks, etc.....	28,980
Breadstuffs.....	28,366
Fibers and textile grasses, unmanufactured.....	27,831
Cocoa, crude.....	27,349
Leather and manufactures of.....	22,871
Art works.....	22,341
Vegetables.....	19,853
Tea.....	18,040
Fertilizers.....	13,608
Hair and manufactures of.....	11,920
Earthen, stone, and china ware.....	11,890
Glass and glassware.....	11,273
Beads and bead ornaments.....	10,874
TOTAL VALUE.....	2,608,009

The following table shows the principal articles forming the Internal Commerce of the United States and their wholesale value at place of production.

(000 omitted)

(Compiled by O. P. Austin, Statistician, National City Bank of New York)

CENSUS YEAR	Manufactures produced	Farm products	Minerals	Forests and fisheries *	Imports	Total †
1900.....	\$11,407,000	\$5,009,000	\$1,107,000	\$500,00	\$367,200	\$18,490,000
1905.....	14,794,000	6,274,000	1,623,000	670,00	517,400	23,878,000
1910.....	20,672,000	9,037,000	1,991,000	725,00	775,300	33,200,000
1915.....	24,246,000	10,774,000	2,394,000	930,00	1,033,560	39,377,000
1920.....	62,418,000	18,264,000	4,613,000	1,520,00	3,117,100	79,932,000

* Above figures are merely the wholesale values at place of production of the chief articles forming the internal commerce and do not purport to represent prices paid by the final consumer or the aggregate commercial value represented by the various sales between place of production and that of consumption.

† Estimated.

The following table shows the relative development of agriculture and manufacturing in the United States 1900-1920 (For earlier figures see, page 506, vol. 27 of 'Encyclopedia Americana') (in millions of dollars; 000,000 omitted).

Compiled by O. P. Austin, Statistician, National City Bank of New York.

CENSUS YEARS	Capital employed		Value of products	
	Census valuation of farms	Capital employed in manufacturing	Wealth produced on farms	Value of manufactures†
1900.....	\$20,439	\$9,814	\$5,099	\$11,407
1905.....	No data	12,075	6,764	14,794
1910.....	40,991	18,428	9,037	20,672
1915.....	*50,000	22,790	10,774	24,246
1920.....	77,924	44,688	18,263	62,418

* Estimate.

† Values are those of the year preceding the census.

Trade, Insular Possessions.—Trade of the United States with its insular possessions in the first quarter century of our occupation totals about 5½ billion dollars against a little more than one-half billion in the 25 years preceding our occupation, according to the *Trade Record* of the National City Bank of New York.

It was on 7 July 1898 that the United States Congress adopted the resolution annexing the Hawaiian Islands in accordance with the expressed wishes of their people; on 12 August of the same year the protocol providing for the cession of Porto Rico to the United States was signed; and on 10 December of that year was signed the treaty with Spain ceding the Philippines to the United States. Guam, formerly a Spanish island, was also occupied by the United States in the same year, while the tiny Samoan island, Tutuila, with the best harbor in all the South Pacific, passed completely under our control in 1899 after several years in which we had co-operated with certain other countries in the control of the Samoan group.

Thus the year 1923 marks distinctly our first quarter century of control of these tropical islands, with a population of about 12 millions. The record of our trade with these islands in the 25 years since occupation is in marked contrast with that of the quarter century prior to our control, while their total trade is also

several times as much since our occupation as that of the preceding 25 years. Our total purchase of their products in the past 25 years has been \$3,350,000,000 against \$502,000,000 in the 25 years preceding our occupation, and our sales to them \$2,038,000,000 against \$134,000,000 in the 25 years prior to our occupation. Of course, our purchases from them were more than they took of our products, for in the islands there are only 12 million people to feed and clothe while we have a population of 108 millions, all wanting tropical products.

The United States supplies a very large proportion of the imports of all these islands, 65 per cent of those of the Philippines, and over 90 per cent of those of Porto Rico and Hawaii. We take about 60 per cent of the exports of the Philippines, 90 per cent of those of Porto Rico, and 95 per cent of those of the Hawaiian group.

Sugar, tobacco and Manila hemp are our chief imports from the Philippines; sugar and pineapples from Hawaii; and sugar, tobacco and tropical fruits from Porto Rico. To all of the islands we export manufactures of every sort and also limited quantities of food, especially flour and meats.

Treasury of the United States.—During the fiscal year 1922, the Treasury accomplished a reduction of about \$1,000,000,000 in the gross debt; a balanced budget with a surplus of over \$300,000,000 above expenditures, and successful refunding operations which have reduced the early-maturing debt to manageable proportions. On 30 June 1921, there was outstanding over \$7,000,000,000 of debt maturing within two years. During the fiscal year 1922, about \$1,000,000,000 was retired through the operation of the sinking-fund, the reduction of the balance in the general fund of the Treasury, and the application of surplus revenues, leaving about \$6,000,000,000 to be refunded. The Treasury undertook to meet the problem squarely by financing the maturities on a straight investment basis. It met with such success in the development of its refunding program that about six billion dollars of the seven billion dollars outstanding on 30 June 1921, have been retired or refunded, leaving only about a billion dollars to be refinanced during the balance of the fiscal year 1923. The gross public debt had been reduced to \$22,986,000,000 on 31 Dec. 1922.

In refunding the early-maturing debt, the Treasury on 15 June 1921, made an offering of Treasury notes which met with hearty response

from the investing public, as did also the six subsequent offerings of Treasury notes shown by the following table:

DATE OF ISSU 1921	Date of maturity	Interest rate, per cent	Amount of allotment
June 15.....	June 15, 1924	5½	\$311,191,600
Sept. 15.....	Sept. 15, 1924	5½	390,706,100
1922			
Feb. 1.....	Mar. 15, 1925	4½	01,599,500
Mar. 15.....	Mar. 15, 1926	4½	17,769,700
June 15.....	Dec. 15, 1925	4½	335,141,300
Aug. 1.....	Sept. 15, 1926	4½	486,940,700
Dec. 15.....	June 15, 1925	4½	469,215,100
TOTAL.....			\$3,212,564,000

A longer term refunding operation was announced on 9 Oct. 1922, when the Secretary of the Treasury, under authority of the Act of Congress approved 24 Sept. 1917, as amended, made a popular offering of 4½ per cent 25-30 year bonds, dated 16 Oct. 1922, maturing 15 Oct. 1952, and redeemable at par and accrued interest, in whole or in part, at the option of the United States, on and after 15 Oct. 1947. The bonds were issued in both coupon and registered form, in denominations of \$100 and upward. Although the offering was largely over-subscribed, the Treasury held down allotments on cash subscriptions to \$511,863,800, and in addition subscriptions aggregating \$252,098,500 were received on exchange for 4¾ per cent Victory notes or Treasury certificates of indebtedness of the series maturing 15 Dec. 1922, making total allotments on the offering aggregating about \$764,000,000.

The Victory Liberty Loan, which amounted to \$3,913,000,000 on 30 June 1921, has been reduced by purchase for the sinking fund, by acceptance of Victory notes in exchange for new Treasury notes, and by calls for redemption before maturity. As a result of these operations, the 3¾ per cent Victory notes have been retired and the amount of outstanding 4¾ per cent Victory notes reduced to \$854,000,000 on 31 Dec. 1922.

The gradual reduction in the amount of outstanding loan and tax certificates resulting from refunding operations, appears from the following table:

DATE	Loan and tax certificates outstanding
August 31, 1919.....	3,938,295,000
June 30, 1920.....	2,485,550,500
June 30, 1921.....	2,450,601,000
June 30, 1922.....	1,754,787,500
December 31, 1922.....	1,073,485,900

On 16 Oct. 1922, the last of the loan certificates were retired, leaving only tax issues outstanding. Every issue of Treasury certificates of indebtedness has been over-subscribed.

Owing to economy and retrenchment in expenditures, the Government was able to balance the budget for the fiscal year 1922 and to close the year with a surplus of about \$321,000,000 on the basis of daily Treasury statements, revised. This was accomplished notwithstanding a shrinkage of about \$1,100,000,000 in cash receipts from income and profits taxes as compared with the previous year.

The revenue Act of 1921 repealed the old

excess profits tax, effective 1 Jan. 1922, and, as a substitute, levied an additional tax of 2½ per cent on the net income of corporations. It also repealed most of the transportation tax and some of the nuisance taxes and made some adjustments in the income tax, including revisions of the rates and of the exemptions. These changes have been operating during the calendar year 1922.

The obligations of various foreign governments held by the Treasury on 31 Dec. 1922, aggregated \$10,044,802.73, principal amount. During the year ending 31 Dec. 1922, the following payments of principal and interest were received:

	Principal	Interest
Belgium.....	\$534,556 70	\$1,379,429 06
Cuba.....	792,500 00	397,187 50
France.....	111,378 04	20,367,057 25
Great Britain.....	30,500,000 00	103,812,500 00
Russia.....		534,465 99
	<u>\$31,938,434 74</u>	<u>\$126,490,639 80</u>

During the last year the Agricultural Credits Act, approved 24 Aug. 1921, was administered by the War Finance Corporation with beneficial results in the agricultural and livestock districts of the country. The Corporation's activities have been conducted on a nation-wide scale. It has approved advances for agricultural and livestock purposes aggregating about \$444,000,000 in 37 States. These advances to farmers have been made through approximately 4,400 banks. 32 co-operative marketing associations and 113 livestock loan companies. In addition, since January, 1921, the War Finance Corporation has authorized advances aggregating \$58,000,000 to assist in financing exports.

For the 12 months ending 1 Nov. 1922, the Federal Land Banks made loans to 70,993 farmers, in the aggregate sum of \$219,780,649 and sold to the investing public Federal Farm Loan bonds aggregating \$278,150,000.

The Treasury has encouraged the growth of the Thrift Movement in the country. While preparing to pay off great maturities, such as Victory Notes and War Savings Stamps, the Treasury has urged that these funds, representing largely the savings of the people, should not be wasted in foolish expenditures or invested in worthless or fraudulent stocks, but should be reinvested in sound securities, particularly those of the Government itself. As of special interest to holders of maturing War-Savings Certificates, it is offering the new Treasury Savings Certificates on an attractive basis, in the belief that those who saved during the war will wish to keep their money invested in Government securities of the same general character but in more convenient form. The new certificates are issued in denominations small enough to meet the demands of all classes of investors; may be purchased up to \$5,000 maturity value of any one series by any one person; yield an attractive rate of interest; and are exempt from the normal Federal income tax and from all State and local taxes (except estate and inheritance taxes). The Treasury considers it of the utmost importance that the habits of thrift and sound investment, acquired by millions of people during the war, should not be lost in the

succeeding period of reconstruction, when the need of avoiding waste and extravagance is as great as ever.

The transactions of the Treasury of the United States for the fiscal year ended 30 June 1922, and its condition at the close of the year, the ordinary receipts and expenditures, by warrants drawn, classified for 1922 and adjusted to the basis of the daily Treasury statements, revised, are shown in the following table:

ACCOUNT	1922
Receipts	
Customs.....	\$357,544,712 40
Internal revenue:	
Income and excess profits taxes.....	2,086,918,464 85
Miscellaneous.....	1,121,239,843 45
Sale of public lands.....	895,391 22
Miscellaneous.....	508,281,071 05
Receipts of the District of Columbia.....	16,812,783 17
Panama Canal tolls, etc.....	12,049,660 65
Total.....	\$4,103,741,926 79
Deduct moneys covered by warrant in the year subsequent to the deposit thereof.....	146,592 21
Total.....	\$4,103,595,334 58
Add moneys received in fiscal year but not covered by warrant.....	1,196 46
TOTAL ORDINARY RECEIPTS.....	\$4,103,596,531 04
Expenditures	
1 Pay warrants drawn (net):	
Legislative.....	\$16,725,922 69
Executive proper.....	216,534 74
European food relief.....	107,746 17
State department.....	10,359,591 47
Treasury department proper.....	219,553,617 78
Public buildings.....	21,077,036 02
War-risk insurance.....	19,986,067 36
War department proper.....	5,877,674 96
Navy department proper.....	2,456,025 26
Interior department, civil.....	47,578,768 08
Post office department, proper.....	3,471,135 56
Postal deficiencies.....	64,346,234 52
Additional compensation, postal service.....	6,700 53
Federal control of telegraph and telephone systems.....	613 20
Department of agriculture.....	143,984,462 69
Department of commerce.....	21,170,146 99
Department of labor.....	6,229,602 39
Department of justice.....	17,850,283 55
Federal control and transportation act, 1920.....	125,232,444 02
United States shipping board.....	86,145,816 32
Other independent bureaus and offices.....	42,450,974 51
Expenses of loans.....	2,933,195 81
Purchase of obligations of foreign governments.....	717,834 36
Purchase of farm-loan bonds.....	175,133 04
District of Columbia.....	23,989,185 60
Veterans' bureau.....	430,712,903 73
Total civil establishment.....	\$1,062,540,497 23
Military establishment proper.....	329,050,896 45
Rivers and harbors.....	43,262,427 26
War, miscellaneous, civil.....	21,076,415 55
Naval establishment proper.....	456,338,787 36
Indian service.....	38,500,413 08
Pensions.....	252,576,847 70
Panama canal.....	2,791,035 40
Interest on the public debt.....	989,485,409 93
Total.....	\$3,195,622,729 96
Deduct repayments received in year but not covered by warrant.....	6,085 41
Total.....	\$3,195,616,644 55
Add repayments covered by warrant in year subsequent to the deposit thereof.....	68,202 86
Total (net).....	\$3,195,684,847 41

¹ To 9 Aug 1921, only

² Deduct excess of repayments.

ACCOUNT—Continued		1922
Expenditures—Continued		
Add decrease in amount of unpaid warrants at close of fiscal year under previous fiscal year.....		\$19,618,905 14
2 Decrease in book credits of disbursing officers and agencies with treasurer United States during fiscal year.....	\$3,215,303,752 55	
Total ordinary expenditures.....	\$3,360,196,364 64	
Public debt retirements chargeable against ordinary receipts—		
Sinking fund.....	\$275,896,000 00	
Purchases from foreign repayments.....	64,837,900 00	
Receipts from estate taxes.....	20,893,200 00	
Purchases from franchise tax receipts (federal reserve banks).....	60,333,000 00	
Forfeitures, gifts, etc.....	392,850 00	
Total.....	\$422,352,950 00	
Total expenditures chargeable against ordinary receipts.....	\$3,782,549,314 64	
Excess of receipts over expenditures.....	\$321,047,216 40	

STATEMENT OF THE TREASURY: 30 DEC. 1922. CURRENT ASSETS AND LIABILITIES.

Gold ASSETS	
Gold coin.....	\$309,443,630 82
Gold bullion.....	2,974,981,344 41
Total.....	\$3,284,424,975 23
LIABILITIES	
Gold certificates outstanding.....	\$708,130,329 00
Gold fund, federal reserve board (act of 23 Dec. 1913, as amended 21 June, 1917).....	2,235,460,674 65
Gold reserve.....	152,979,025 63
NOTE—Reserved against \$346,681,016 of U. S. notes and \$1,484,883 of treasury notes of 1890 outstanding Treasury notes of 1890 are also secured by silver dollars in the treasury.	
Gold in general fund.....	187,854,945 95
Total.....	\$3,284,424,975 23
Silver Dollars ASSETS	
Silver dollars.....	\$373,561,620 00
LIABILITIES	
Silver certificates outstanding.....	\$344,286,693 00
Treasury notes of 1890 outstanding.....	1,484,883 00
Silver dollars in general fund.....	27,790,044 00
Total.....	\$373,561,620 00
General Fund ASSETS	
Gold (see above).....	\$187,854,945 95
Silver dollars (see above).....	27,790,044 00
United States notes.....	3,853,756 00
Federal reserve notes.....	2,636,090 00
Federal reserve bank notes.....	1,190,306 00
National bank notes.....	17,553,571 04
Subsidiary silver coin.....	12,876,642 81
Minor coin.....	2,812,162 40
Silver bullion.....	27,539,135 99
Unclassified (unsorted currency, etc.).....	3,045,673 67
Deposits in federal land banks.....	500,000 00
Deposits in federal reserve banks.....	34,162,029 14
Deposits in special depositories account of sales of treasury bonds, treasury notes, and certificates of indebtedness	469,557,000 00
Deposits in foreign depositories:	
To credit of treasurer United States.....	88,762 76
To credit of other government officers.....	228,917 94
Deposits in national banks:	
To credit of treasurer United States.....	8,469,056 17
To credit of other government officers.....	22,311,750 34
Deposits in Philippine treasury:	
To credit of treasurer United States.....	1,083,917 32
TOTAL.....	\$823,553,761 53

LIABILITIES		LIABILITIES—(Continued)	
Treasurer's checks outstanding.....	\$2,854,897 07	Redemption of federal reserve bank notes (5 per cent fund, lawful money)	\$2,115,026 55
Deposits of government officers:		Redemption of national bank notes (5 per cent fund, lawful money).....	30,028,776 15
Post office department.....	10,782,285 79	Retirement of additional circulating notes, act 30 May 1908.....	24,130 00
Board of trustees, postal savings system—5 per cent reserve, lawful money.....	6,670,992 80	Exchanges of currency, coin, etc....	8,780,727 88
Other deposits.....	76,636 21		\$285,692,639 80
Comptroller of the currency, agent for creditors of insolvent banks.....	1,783,740 71	Net balance.....	537,861,121 73
Postmasters, clerks of courts, disbursing officers, etc.....	36,080,124 55	Total.....	\$823,553,761 53
Deposits for:			
Redemption of federal reserve notes (5 per cent fund, gold).....	186,495,302 09		

Outstanding Federal Reserve Notes, Federal Reserve Bank Notes, and National-Bank Notes.

	Total amount outstanding	Amount in the treasury in process of redemption	Amount in circulation	Amount in treasury cash (not including amount in process of redemption)	Amount in circulation outside the treasury
Federal reserve notes ¹	\$2,835,092,000 00	\$356,265 00	\$2,834,735,735 00	\$2,279,825 00	\$2,832,455,910 00
Federal reserve bank notes ²	43,913,965 00	1,027,229 00	42,886,736 00	163,077 00	42,723,659 00
National bank notes ²	762,128,087 00	17,521,571 00	744,606,516 00	32,000 00	744,574,516 00

¹ Against which \$836,933,000 in commercial paper is held by Federal reserve agents and \$2,198,846,000 in gold held jointly by Federal reserve banks and agents.

² Secured by United States bonds and other securities held by the Treasurer.

Transactions Affecting the Circulation of Federal Reserve Notes, Federal Reserve Bank Notes, and National-Bank Notes.

	Fiscal year 1923	Corresponding period fiscal year 1922
Federal reserve notes:		
Issued (from weekly reports).....	\$ 1,120,560,000 00	\$1,191,759,000 00
Retired (from weekly reports).....	822,955,000 00	1,391,244,000 00
Received for redemption by treasurer United States.....	27,623,477 00	38,416,617 00
Federal reserve bank notes:		
Issued.....	5,708,000 00	61,596,000 00
Received for redemption by treasurer United States.....	42,286,391 00	94,739,850 00
National bank notes:		
Issued.....	261,022,760 00	322,797,200 00
Received for redemption by treasurer United States.....	259,101,614 00	321,063,377 00
Additional national bank notes retired.....	6,950 00	25,780 00

Statement of the Public Debt, 31 Dec. 1922

[On the basis of daily Treasury statements.]

Bonds:	
Consols of 1930.....	\$599,724,050 00
Loan of 1925.....	118,489,900 00
Panama's of 1916-1936.....	48,954,180 00
Panama's of 1918-1938.....	25,947,400 00
Panama's of 1961.....	50,000,000 00
Conversion bonds.....	28,894,500 00
Postal savings bonds.....	11,851,000 00
	\$883,861,030 00

First Liberty loan of 1932-1947.....	\$1,951,812,350 00
Second Liberty loan of 1927-1942....	3,269,148,800 00
Third Liberty loan of 1928.....	3,448,273,900 00
Fourth Liberty loan of 1933-1938....	6,330,860,300 00

Treasury bonds of 1947-1952.....	\$15,000,095,350 00
	763,861,100 00

Total bonds.....\$16,647,817,480 00

Notes:	
Victory Liberty loan, 4½ per cent, maturing 20 May 1923.....	\$854,359,400 00

Treasury notes—	
Series A—1924.....	\$311,191,600 00
Series B—1924.....	390,706,100 00
Series A—1925.....	601,599,500 00

Statement of Public Debt—(Continued)

Notes—Continued	
Treasury notes—Continued	
Series B—1925.....	\$335,134,500 00
Series C—1925.....	435,740,209 46
Series A—1926.....	617,769,700 00
Series B—1926.....	461,939,900 00
	\$3,154,081,509 46

Treasury certificates:	
Tax.....	\$1,073,485,900 00
Special issue.....	17,000,000 00
	\$1,090,485,900 00

War savings securities (net cash receipts).....	\$594,132,476 31
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Treasury savings securities (net redemption value of certificates outstanding).....	135,593,858 49
	\$729,726,334 80

Total interest-bearing debt.....	\$22,476,470,624 26
Debt on which interest has ceased.....	248,101,000 26
Noninterest-bearing debt.....	261,746,393 57

Total gross debt.....\$22,986,318,018 09

¹ Includes \$236,526,800, principal amount, of 4½ per cent Victory notes called for redemption 15 Dec. 1922.

Comparative Public Debt Statement.

[On the basis of daily Treasury statements.]

	31 Aug. 1919 When war debt was at its peak	31 Dec. 1921	31 Dec. 1922
Gross debt *	\$26,596,701,648 01	\$23,438,984,351 36	\$22,986,318,018 09
Net balance in general fund	1,118,109,534 76	487,767,529 15	537,861,121 73
Gross debt less net balance in general fund	\$25,478,592,113 25	\$22,951,216,822 21	\$22,448,456,896 36
* Includes treasury certificates (unmatured):			
Loan and tax	\$3,938,225,000 00	\$2,082,595,000 00	\$1,073,485,900 00
Pittman act and special	262,914,050 39	113,000,000 00	17,000,000 00
Total	\$4,201,139,050 39	\$2,195,595,000 00	\$1,090,485,900 00

Money in Circulation in the United States on 1 July of Each Year, From 1914 to 1922;
According to the New Form of Circulation Statement Adopted by the Treasury Department,
July, 1922.

Compiled by O. P. Austin, Statistician, National City Bank of New York.

	Stock of money in the U. S.	Money held in the treasury, total	Money outside of the treasury			
			Total	Held by Federal Reserve Banks and agents	In circulation	
					Amount	Per capita
1 July 1913	\$3,720,070,016	\$1,832,114,538	\$3,363,738,449		\$3,363,738,449	\$34 56
1 July 1914	3,738,288,871	1,843,452,323	3,402,015,427		3,402,015,427	34 35
1 July 1915	3,989,456,186	1,964,853,949	3,644,030,938	\$382,964,815	3,261,066,123	32 38
1 July 1916	4,482,891,938	2,355,630,762	4,184,670,567	593,338,843	3,591,331,724	35 06
1 July 1917	5,407,990,026	2,858,121,673	4,613,259,182	763,862,294	3,849,396,888	36 96
1 July 1918	6,741,072,294	2,973,118,006	5,175,648,539	839,642,745	4,336,005,794	40 96
1 July 1919	7,605,366,571	2,906,918,873	5,605,120,645	810,400,758	4,794,719,887	45 18
1 July 1920	7,909,998,099	2,378,586,783	6,236,049,071	903,907,594	5,332,141,477	50 11
1 July 1921	8,099,006,237	2,918,696,736	6,099,952,887	1,257,368,483	4,842,584,404	44 80
1 July 1922	8,178,602,408	3,511,547,398	5,667,632,635	1,292,076,982	4,375,555,653	39 87
1 Jan. 1923	8,614,633,297	3,696,096,962	5,972,238,240	2,235,460,675	4,732,898,991	42 81

United States Budget.—The budget system was introduced in 1921 and marked the culmination of years of effort to provide for executive control over Federal expenditures. With the appointment of the Director on 23 June 1921 the Bureau of the Budget began to function. In order to promote economy and efficiency in the routine business administration of the Government the President designated a Chief Co-ordinator and charged him, under the general direction of the Director of the Bureau, with the responsibility of representing the President in the application of uniform business principles and methods to the expenditure of public funds. In order to provide the necessary interdepartmental contact and to develop business information, there were established under the Chief Co-ordinator a number of co-ordinating boards relating to certain specific business activities of the Government. On 5 Dec. 1921, President Harding transmitted to Congress the budget for the fiscal year ending 30 June 1923—the first complete year under the new system. In this budget the estimated receipts for the fiscal year 1922 were \$3,943,453,663, and the estimated expenditures \$3,967,922,366, thus forecasting an apparent excess of expenditures over receipts of \$24,468,703. At the close of business on 30 June 1922, it was found that the actual receipts for

the fiscal year 1922 were \$4,109,104,150.94 and the actual expenditures \$3,795,302,499.84, making an excess of receipts over expenditures of \$313,801,651.10.

While the estimate of receipts and expenditures for the fiscal year 1923, as made at the time of the presentation of the budget in December, 1921, indicated that the receipts would be \$3,338,182,750 and the expenditures \$3,505,754,727, a revision of the prospective receipts and expenditures made on 1 July 1922, indicated that the receipts would be \$3,073,825,311 and the expenditures \$3,771,258,542. That revised estimate indicated an excess of expenditures over receipts of \$697,433,231.

As a result of the operations of the first five months of the fiscal year 1922-23, a revised estimate of receipts was made at the beginning of December 1922 showing a total of \$3,429,862,959. The considerable increase over the July estimate was due to the stimulation in the collection of ordinary receipts, aided by an increase in the customs receipts. On the other hand, due to continued pressure for economies and a revision of the expenditure program based on five months of actual operation, it was estimated in December that the expenditures for the same year would be \$3,733,801,671. These revised figures indicated an apparent prospective deficit of \$273,938,712.

In the budget for the fiscal year ending 30 June 1924, transmitted to Congress by President Harding on 5 Dec. 1922 it was estimated that the total ordinary receipts from all sources, excluding the Postal Service, will be \$3,361,812,359, or \$747,291,791.94 less than the actual receipts for 1922 and \$68,050,600 less than the estimated receipts for 1923. The estimate of expenditures for the fiscal year 1924 is \$3,180,843,234.

The foregoing does not include expenditures for the Postal Service and the Post Office

996,841.69, an estimated deficiency of \$31,502,570.76 being included in the estimated ordinary expenditures for 1923. The estimated expenditures from postal revenues for 1924 are \$584,653,151.50, and it is estimated that through proper readjustments there will be a surplus of postal revenues over expenditures amounting to \$952,439.56 for that year.

The following table shows the sources whence the government revenues are derived. For 1922 actual figures are given; for 1923 and 1924 estimated.

	RECEIPTS		
	1924	1923	1922
Internal revenue receipts.....	\$2,425,000,000	\$2,400,000,000	\$3,213,253,256 79
Customs receipts.....	425,000,000	450,000,000	356,443,387 18
Miscellaneous receipts:			
Interest, premium and discount.....	232,863,263	237,800,455	57,460,287 03
Sale of government properties.....	35,404,410	95,859,125	116,287,787 86
Public domain receipts.....	16,149,650	16,214,600	16,334,595 64
Franchise tax, Federal Reserve Banks.....	10,000,000	10,000,000	59,974,465 64
Profits on coinage, bullion deposits, etc.....	10,000,000	17,000,000	21,660,921 07
Fees, fines and forfeitures.....	33,000,642	31,295,357	32,539,339 35
Repayments of foreign loans and other investments.....	59,175,000	58,643,000	120,658,726 93
District of Columbia receipts.....	15,506,500	16,363,415	15,235,016 44
Panama Canal receipts.....	14,224,000	13,924,000	11,747,092 47
Trust fund receipts.....	65,319,179	61,196,522	57,939,581 32
Other sources.....	20,169,715	21,566,485	29,569,693 22
Total miscellaneous receipts.....	\$511,812,359	\$579,862,959	\$539,407,506 97
Total receipts, all sources.....	3,361,812,359	3,429,862,959	4,109,104,150 94

Department payable from postal revenues. Such expenditures for the fiscal year 1922 were \$545,666,532.28, a deficiency of \$64,346,234.52, payable from ordinary receipts, being included in the ordinary expenditures for 1922 hereinbefore mentioned. The estimated expenditures from postal revenues during 1923 are \$559,-

The following table shows the appropriations for the several great divisions of the Federal government for 1923 and 1924. In the estimates of the year 1924 the 67th Congress made several changes, increasing the appropriations for some departments and reducing others.

COMPARATIVE STATEMENT OF ESTIMATES OF APPROPRIATIONS FOR 1924 AND APPROPRIATIONS FOR 1923		
	Estimates of appropriations, 1924	Appropriations, 1923
Legislative establishment.....	\$14,418,912 60	\$14,504,164 95
Executive office.....	382,850 00	396,595 00
Special repairs, executive mansion.....	25,000 00	
Independent offices:		
Civil Service Commission.....	877,295 00	807,911 00
Employers' Compensation Commission.....	2,432,740 00	2,660,306 00
Federal Board for Vocational Education.....	6,427,000 00	5,932,000 00
Federal Trade Commission.....	955,000 00	955,600 00
General Accounting Office.....	3,361,163 00	3,922,418 00
Housing Corporation.....	870,450 00	1,056,425 00
Interstate Commerce Commission.....	4,514,500 00	5,361,462 00
Shipping Board and Emergency Fleet Corporation.....	50,411,500 00	100,459,000 00
State, War and Navy Department buildings.....	1,707,230 00	3,771,950 00
Tariff Commission.....	700,000 00	345,000 00
United States Veterans' Bureau.....	440,313,000 00	422,077,523 45
Other independent offices.....	1,874,780 74	2,287,884 00
Department of Agriculture.....	81,251,613 00	62,412,036 00
Department of Commerce.....	19,715,535 00	20,618,496 20
Department of the Interior.....	316,207,752 00	327,514,157 10
Department of Justice.....	18,751,056 00	18,631,205 00
Department of Labor.....	6,203,556 00	7,490,188 11
Navy Department.....	296,934,025 00	298,324,265 25
Post Office Department, payable from the treasury.....		14,600 00
State Department.....	15,058,237 79	11,095,200 66
Treasury Department.....	148,888,862 28	160,627,265 44
War Department, including Panama Canal.....	326,517,300 28	346,894,386 87
District of Columbia.....	25,043,973 00	25,990,050 80
Ordinary.....	\$1,783,843,331 69	\$1,844,149,890 83
Reduction in principal of the public debt:		
Sinking fund.....	\$298,872,000 00	\$283,838,800 00
Purchase of Liberty bonds from foreign repayments.....	31,225,000 00	31,250,000 00
Redemption of bonds and notes from estate taxes.....	5,000,000 00	5,000,000 00
Redemption of securities from Federal Reserve Bank franchise tax receipts.....	10,000,000 00	10,000,000 00
Principal of the public debt.....	\$345,097,000 00	\$330,088,800 00
Interest on the public debt.....	\$950,000,000 00	*\$1,100,000,000 00
Total payable from the treasury.....	\$3,078,940,331 69	\$3,274,238,690 83
Post Office Department and Postal Service, payable from postal revenues.....	590,166,191 50	564,524,766 50
Total, including Post Office Department and Postal Service.....	\$3,669,106,523 19	\$3,838,763,457 33

* Including \$125,000,000 discount accruals of war savings stamps, series of 1918, due 1 Jan. 1923.

The summary of the Budget in the United States as contained in the President's message of 5 Dec. 1922 is as follows:

BUDGET SUMMARY

(Exclusive of postal revenues and postal expenditures paid from postal revenues)

	Estimated	
	1924	1923
Total receipts.....	\$3,361,812,359	\$3,429,862,959
Total expenditures (including reduction of the public debt required by law to be made from ordinary receipts).....	3,180,843,234	3,703,801,671
Excess of expenditures.....		\$273,938,712
Excess of receipts.....	\$180,969,125	
		\$313,801,651 10

Defense.—See ARMY OF THE UNITED STATES; MARINE CORPS, UNITED STATES; UNITED STATES NAVY.

Communications.—See articles on POST OFFICE; RAILWAYS; TELEGRAPH AND CABLE COMPANIES, MILEAGE AND REVENUE OF; ROADS, PUBLIC, UNITED STATES BUREAU OF.

Shipping.—See MERCHANT MARINE OF THE UNITED STATES.

Diplomatic Representatives.—The following is a list of the diplomatic representatives to and from the United States:

EMBASSIES AND LEGATIONS TO THE UNITED STATES

ARGENTINA.—Tomas A. Le Breton, Ambassador Extraordinary and Plenipotentiary.
 AUSTRIA.—Edgar L. W. Procknik, Counselor of Legation and Chargé d'affaires ad interim.
 BELGIUM.—Baron de Cartier de Marchienne, Ambassador Extraordinary and Plenipotentiary.
 BOLIVIA.—Adolfo Ballivian, Envoy Extraordinary and Minister Plenipotentiary.
 BRAZIL.—Augusto Cochrane de Alencar, Ambassador Extraordinary and Plenipotentiary.
 BULGARIA.—Stephan Panaretoff, Envoy Extraordinary and Minister Plenipotentiary.
 CHILE.—Don Beltran Mathieu, Ambassador Extraordinary and Plenipotentiary.
 CHINA.—Sao-Ke Alfred Sze, Envoy Extraordinary and Minister Plenipotentiary.
 COLOMBIA.—Dr. Enrique Olaya, Envoy Extraordinary and Minister Plenipotentiary.
 COSTA RICA.—Dr. Don Octavio Beeche, Envoy Extraordinary and Minister Plenipotentiary.
 CUBA.—Dr. Carlos Manuel de Cespedes, Envoy Extraordinary and Minister Plenipotentiary.
 CZECHOSLOVAKIA.—Dr. Bedrich Stepanek, Envoy Extraordinary and Minister Plenipotentiary.
 DENMARK.—Constantin Brun, Envoy Extraordinary and Minister Plenipotentiary.
 DOMINICAN REPUBLIC.—Licdo. Emilio C. Joubert, Envoy Extraordinary and Minister Plenipotentiary.
 ECUADOR.—Dr. Don Rafael H. Elizalde, Envoy Extraordinary and Minister Plenipotentiary.
 FINLAND.—Axel Leonard Astrom, Envoy Extraordinary and Minister Plenipotentiary.
 FRANCE.—J. J. Jusserand, Ambassador Extraordinary and Plenipotentiary.
 GERMANY.—Dr. Otto Wiedfeldt, Ambassador Extraordinary and Plenipotentiary.
 GREAT BRITAIN.—The Right Honorable Sir Auckland Geddes, G.C.M.G., K.C.B., Ambassador Extraordinary and Plenipotentiary.
 GREECE.—George Dracopoulos, Secretary of Legation and Chargé d'affaires ad interim.
 GUATEMALA.—Don Francisco Sanchez Latour, Envoy Extraordinary and Minister Plenipotentiary.
 HAITI.—Albert Blanchet, Envoy Extraordinary and Minister Plenipotentiary.
 HONDURAS.—Don R. Camilo Diaz, Secretary of Legation and Chargé d'affaires ad interim.
 HUNGARY.—Count Laszlo Szechenyi, Envoy Extraordinary and Minister Plenipotentiary.
 ITALY.—Don Gelasio Caetani.
 JAPAN.—Masanao Hanihara.
 LATVIA.—C. Louis Seya, Chargé d'affaires ad interim.
 LITHUANIA.—Valdemaras Carneckis, Chargé d'affaires ad interim.
 LUXEMBURG.—Baron Raymond de Waha, Chargé d'affaires.

MEXICO.—Don Salvador Diego-Fernandez, Minister Plenipotentiary, Chargé d'affaires ad interim.

NETHERLANDS.—Dr. J. B. Hubrecht, Secretary of Legation and Chargé d'affaires ad interim.

NICARAGUA.—Don Emiliano Chamorro, Envoy Extraordinary and Minister Plenipotentiary.

NORWAY.—H. H. Bryn, Envoy Extraordinary and Minister Plenipotentiary.

PANAMA.—Dr. Don Ricardo J. Alfaro, Envoy Extraordinary and Minister Plenipotentiary.

PARAGUAY.—Wm. Wallace White, Consul General of Paraguay in New York City, in charge of the Legation.

PERSIA.—Mirza Hussein Khan Alai, Envoy Extraordinary and Minister Plenipotentiary.

PERU.—Don Federico Alfonso Pezet, Ambassador Extraordinary and Plenipotentiary.

POLAND.—Dr. Ladislas Wroblewski, Envoy Extraordinary and Minister Plenipotentiary.

PORTUGAL.—Viscount d'Alte, Envoy Extraordinary and Minister Plenipotentiary.

RUMANIA.—Prince A. Bibesco, Envoy Extraordinary and Minister Plenipotentiary.

RUSSIA.—Serge Ughet, Financial Attaché.

SALVADOR.—Don Salvador Sol, M., Envoy Extraordinary and Minister Plenipotentiary.

SERBS, CROATS, AND SLOVENES.—Dr. Ante Tresich Pavichich, Envoy Extraordinary and Minister Plenipotentiary.

SIAM.—Phya Prabha Karavongse, Envoy Extraordinary and Minister Plenipotentiary.

SPAIN.—Don Juan Riano y Gayangos, Chamberlain to His Majesty the King of Spain, Ambassador Extraordinary and Plenipotentiary.

SWEDEN.—Captain Axel F. Wallenberg, Envoy Extraordinary and Minister Plenipotentiary.

SWITZERLAND.—Marc Peter, Envoy Extraordinary and Minister Plenipotentiary.

URUGUAY.—Dr. Jacobo Varela, Envoy Extraordinary and Minister Plenipotentiary.

VENEZUELA.—Dr. Don Pedro Manuel Arcaya, Envoy Extraordinary and Minister Plenipotentiary.

DIPLOMATIC SERVICE OF THE UNITED STATES

ALBANIA.—Ulysses Grant-Smith, Envoy Extraordinary and Minister Plenipotentiary.

ARGENTINA.—John W. Riddle, Ambassador Extraordinary and Plenipotentiary.

AUSTRIA.—Albert Henry Washburn, Envoy Extraordinary and Minister Plenipotentiary.

BELGIUM.—Henry P. Fletcher, Ambassador Extraordinary and Plenipotentiary.

BOLIVIA.—Jesse S. Cottell, Envoy Extraordinary and Minister Plenipotentiary.

BRAZIL.—Edwin V. Morgan, Ambassador Extraordinary and Plenipotentiary.

BULGARIA.—Charles S. Wilson, Envoy Extraordinary and Minister Plenipotentiary.

CHILE.—William Miller Collier, Ambassador Extraordinary and Plenipotentiary.

CHINA.—Jacob Gould Schurmann, Envoy Extraordinary and Minister Plenipotentiary.

COLOMBIA.—Samuel H. Piles, Envoy Extraordinary and Minister Plenipotentiary.

COSTA RICA.—Roy T. Davis, Envoy Extraordinary and Minister Plenipotentiary.

CUBA.—Maj.-Gen. Enoch H. Crowder, Envoy Extraordinary and Minister Plenipotentiary.

CZECHOSLOVAKIA.—Lewis Einstein, Envoy Extraordinary and Minister Plenipotentiary.

DENMARK.—John Dyneley Prince, Envoy Extraordinary and Minister Plenipotentiary.

DOMINICAN REPUBLIC.—William W. Russell, Envoy Extraordinary and Minister Plenipotentiary.

ECUADOR.—Gerhard A. Bading, Envoy Extraordinary and Minister Plenipotentiary.

EGYPT.—J. Morton Howell, Envoy Extraordinary and Minister Plenipotentiary.

ESTONIA.—Frederick W. B. Coleman, Envoy Extraordinary and Minister Plenipotentiary. See Latvia.

FINLAND.—Charles L. Kagey, Envoy Extraordinary and Minister Plenipotentiary.

FRANCE.—Myron T. Herrick, Ambassador Extraordinary and Plenipotentiary.

GERMANY.—Alanson B. Houghton, Ambassador Extraordinary and Plenipotentiary.

GREAT BRITAIN.—George Harvey, Ambassador Extraordinary and Plenipotentiary.

GREECE.———, Envoy Extraordinary and Minister Plenipotentiary.

GUATEMALA.—Arthur H. Geissler, Envoy Extraordinary and Minister Plenipotentiary.

HAITI.—Arthur Bailly-Blanchard, Envoy Extraordinary and Minister Plenipotentiary.

HONDURAS.—Franklin E. Morales, Envoy Extraordinary and Minister Plenipotentiary.

HUNGARY.—Theodore Brentano, Envoy Extraordinary and Minister Plenipotentiary.

ITALY.—Richard Washburn Child, Ambassador Extraordinary and Plenipotentiary.

JAPAN.—Cyrus E. Woods, Ambassador Extraordinary and Plenipotentiary.

LATVIA.—Frederick W. B. Coleman, Envoy Extraordinary and Minister Plenipotentiary.

LIBERIA.—Solomon Porter Hood, Minister Resident and Consul General.

LITHUANIA.—Frederick W. B. Coleman, Envoy Extraordinary and Minister Plenipotentiary. See Latvia.

LUXEMBURG.———, Envoy Extraordinary and Minister Plenipotentiary.

MEXICO.———, Ambassador Extraordinary and Plenipotentiary.

MOROCCO.—Joseph M. Denning, Agent and Consul General.

NETHERLANDS.———, Envoy Extraordinary and Minister Plenipotentiary.

NICARAGUA.—John E. Ramer, Envoy Extraordinary and Minister Plenipotentiary.

NORWAY.—Laurits S. Swenson, Envoy Extraordinary and Minister Plenipotentiary.

PANAMA.—John Glover Smith, Envoy Extraordinary and Minister Plenipotentiary.

PARAGUAY.—William J. O'Toole, Envoy Extraordinary and Minister Plenipotentiary.

PERSIA.—Joseph Saul Kornfeld, Envoy Extraordinary and Minister Plenipotentiary.

PERU.—Miles Poindexter, Ambassador Extraordinary and Plenipotentiary.

POLAND.—Hugh S. Gibson, Envoy Extraordinary and Minister Plenipotentiary.

PORTUGAL.—Fred Morris Dearing, Envoy Extraordinary and Minister Plenipotentiary.

RUMANIA.—Peter Augustus Jay, Envoy Extraordinary and Minister Plenipotentiary.

SALVADOR.—Montgomery Schuyler, Envoy Extraordinary and Minister Plenipotentiary.

SERBS, CROATS, AND SLOVENES, KINGDOM OF.—H. Percival Dodge, Envoy Extraordinary and Minister Plenipotentiary.

SIAM.—Edward E. Brodie, Envoy Extraordinary and Minister Plenipotentiary.

SPAIN.—Alexander P. Moore, Ambassador Extraordinary and Plenipotentiary.

SWEDEN.—Robert Woods Bliss, Envoy Extraordinary and Minister Plenipotentiary.

SWITZERLAND.—Joseph C. Grew, Envoy Extraordinary and Minister Plenipotentiary.

TURKEY.———, Ambassador Extraordinary and Plenipotentiary.

URUGUAY.—Hoffman Philip, Envoy Extraordinary and Minister Plenipotentiary.

VENEZUELA.—Willis C. Cook, Envoy Extraordinary and Minister Plenipotentiary.

Congress.—The first session of the Sixty-Seventh Congress began 11 April, 1921; recessed 24 Aug. to 21 Sept. 1921 and adjourned 23 Nov. 1921. The second session began 5 Dec. 1921, recessed 30 June 1922 to 15 Aug. 1922 and adjourned 22 Sept. 1922. The third session began 20 Nov. 1922. The fourth session began 4 Dec. 1922 and ended 4 March 1923. The President of the Senate of the 67th Congress was Calvin Coolidge. The Speaker of the House of Representatives in the same Congress was Frederick H. Gillett of Massachusetts. In the Senate of the 67th Congress there were 36 Democrats and 60 Republicans. Of special note was the appointment of Mrs. Rebecca Latimer Felton of Georgia temporarily to fill the place

of Senator Thomas E. Watson, deceased. Mrs. Felton was sworn in 21 Nov. 1922 and served one day, then giving place to her successor, Walter F. George, who was elected 7 Nov. 1922.

The terms of Representatives to the 68th Congress began 4 March 1923 and end 4 March 1925. In the 68th Congress there are 53 Republican Senators, 42 Democratic Senators and one Farmer-Labor Senator. The House of Representatives of the 68th Congress has 435 members, of whom 224 are Republicans, 207 Democrats, one Farmer-Labor Party, one Independent, one Socialist.

The following is a list of the State delegations to the 68th Congress.

[Note: Since the list was compiled the following members of Congress have died: Senators: Samuel D. Nicholson, Colo., 24 March; Knute Nelson, 28 April; Representatives: John R. Tyson, Ala., 27 March; J. M. C. Smith, Mich., 20 March; Daniel J. Riordan, N. Y., 27 April, 1923.]

ALABAMA: SENATORS.—Oscar W. Underwood, D; J. Thos. Heflin, D. REPRESENTATIVES.—John McDuffie*, D; John R. Tyson*, D; Henry B. Steagall*, D; Lamar Jeffers*, D; William B. Bowling*, D; William B. Oliver*, D; Miles C. Allgood, D; Edward B. Almon*, D; George Huddleston*, D; William B. Bankhead*, D.

ARIZONA: SENATORS.—Henry F. Ashurst, D; Ralph H. Cameron, R. REPRESENTATIVE.—Carl Hayden*, D.

ARKANSAS: SENATORS.—Thad. H. Caraway, D; Joe T. Robinson, D. REPRESENTATIVES.—William J. Driver*, D; William A. Oldfields*, D; John N. Tillman*, D; Otis Wingo*, D; Heartsill Ragon, D; L. E. Sawyer, D; Tilman B. Parks*, D.

CALIFORNIA: SENATORS.—Hiram W. Johnson, R; Samuel M. Shortridge, R. REPRESENTATIVES.—Clarence F. Lea*, D; John E. Raker*, D; Charles F. Curry*, R; Julius Kahn*, R; Mrs. Mae Nolan, R; James H. MacLafferty, R; Henry E. Barbour*, R; Arthur M. Free*, R; Walter F. Lineberger*, R; Henry Z. Osborne*, R; Philip D. Swing*, R.

COLORADO: SENATORS.—Samuel D. Nicholson, R; L. C. Phippe, R. REPRESENTATIVES.—William N. Vaile*, R; Charles B. Timberlake*, R; Guy U. Hardy*, R; Edward T. Taylor*, D.

CONNECTICUT: SENATORS.—George P. McLean, R; Frank B. Brandegee, R. REPRESENTATIVES.—E. Hart Fenn*, R; Richard P. Freeman*, R; John Q. Tilson*, R; Schuyler Merritt*, R; Patrick B. O'Sullivan, D.

DELAWARE: SENATORS.—Thomas F. Bayard, D; L. H. Ball, R. REPRESENTATIVE.—William H. Boyce, D.

FLORIDA: SENATORS.—Park Trammell, D; Duncan U. Fletcher, D. REPRESENTATIVES.—Herbert J. Drane*, D; Frank Clark*, D; John H. Smithwick*, D; William J. Sears*, D.

GEORGIA: SENATORS.—Walter F. George, D; W. J. Harris, D. REPRESENTATIVES.—R. Lee Moore, D; Frank Park*, D; Charles R. Crisp*, D; William C. Wright*, D; William D. Upshaw*, D; James W. Wise*, D; Gordon Lee*, D; Charles H. Brand*, D; Thomas M. Bell*, D; Carl Vinson*, D; William C. Lankford*, D; William W. Larsen*, D.

IDAHO: SENATORS.—Frank R. Gooding, R; William E. Borah, R. REPRESENTATIVES.—Burton L. French*, R; Addison T. Smith*, R.

ILLINOIS: SENATORS.—Wm. B. McKinley, R; Medill McCormick, R. REPRESENTATIVES.—Martin B. Madden*, R; Morton D. Hull, Elliott W. Sproul*, R; John W. Rainey*, D; Adolph J. Sabath*, D; James R. Buckley, D; M. Alfred Michaelson*, R; Stanley H. Kuns*, D; Fred A. Britten*, R; Carl R. Chindblom*, R; Frank R. Reid, R; Charles E. Fuller*, R; John C. McKenzie*, R; William J. Graham*, R; Edward J. King*, R; William B. Hull, R; Frank H. Funk*, R; William P. Holaday, R; Allen F. Moore*, R; Henry T. Rainey*, D; J. Earl Major, D; Edward E. Miller, R; William W. Arnold, D; Thomas S. Williams*, R; Edward E. Denison*, R; Richard Yates*, R; Henry R. Rathbone, R.

INDIANA: SENATORS.—Samuel M. Ralston, D; James E. Watson, R. REPRESENTATIVES.—William E. Wilson, D; Arthur H. Greenwood, D; Frank Gardner, D; Harry C. Canfield, D; Everett Sanders*, R; Richard N. Elliott*, R; Merrill Moores*, R; Albert H. Vestal*, R; Fred S. Furnell*, R; William R. Wood*, R; Samuel B. Cook, D; Louis W. Fairfield*, R; Andrew J. Hickey*, R.

IOWA: SENATORS.—Albert B. Cummins, R; Smith W. Brookhart, R. REPRESENTATIVES.—William F. Kopp*, R; Harry E. Hull*, R; T. J. B. Robinson, R; Gilbert N. Haugen*,

* Served in the 67th Congress.

† Served in a previous Congress.

R; Cyrenus Cole*, R; C. William Ramseyer*, R; Cassius C. Dowell*, R; Horace M. Townner*, R; William R. Green*, R; L. J. Dickinson*, R; William D. Boies*, R.

KANSAS: SENATORS.—Charles Curtis, R; Arthur Capper, R. REPRESENTATIVES.—Daniel R. Anthony, Jr., R; Edward C. Little*, R; W. H. Sproul, R; Homer Hoch*, R; James G. Strong*, R; Hays B. White*, R; J. M. Tincher*, R; William A. Ayres, D.

KENTUCKY: SENATORS.—Rich. P. Ernst, R; A. O. Stanley, D. REPRESENTATIVES.—Alben W. Barkley*, D; David H. Kincheloe*, D; Robert Y. Thomas, Jr., D; Ben Johnson*, D; Maurice H. Thatcher, R; Arthur B. Rouse*, D; James C. Cantrill*, D; Ralph Gilbert*, D; William J. Fields*, D; John W. Langley*, R; John M. Robison*, R.

LOUISIANA: SENATORS.—Edwin S. Broussard, D; Joseph E. Ransdell, D. REPRESENTATIVES.—James O'Connor*, D; H. Gariand Dupré*, D; Whittemell P. Martin*, D; John N. Sandlin*, D; Riley J. Wilson*, D; George K. Pavrot, D; Ladislav Lazaro*, D; James B. Aswell, D.

MAINE: SENATORS.—Frederick Hale, R; Bert M. Fernald, R. REPRESENTATIVES.—Carroll L. Beedy*, R; Wallace H. White, Jr., R; John E. Nelson*, R; Ira G. Hersey*, R.

MARYLAND: SENATORS.—William C. Bruce, D; O. E. Weller, R. REPRESENTATIVES.—T. Alan Goldsborough*, D; Millard E. Tydings, D; John Philip Hill*, R; J. Charles Linthicum*, D; Sydney E. Mudd*, R; Frederick N. Zihlman*, R.

MASSACHUSETTS: SENATORS.—Henry C. Lodge, R; D. I. Walsh, D. REPRESENTATIVES.—Allen F. Treadway*, R; Frederick H. Gillett*, R; Calvin D. Paige*, R; Samuel E. Winslow*, R; John Jacob Rogers*, R; A. Piatt Andrew*, R; William P. Connery, Jr., D; Frederick W. Dallinger*, R; Charles L. Underhill*, R; Peter F. Tague*, D; Geo. Holden Tinkham*, R; James A. Gallivan*, D; Robert Luce*, R; Louis A. Frothingham*, R; William S. Greene*, R; Charles L. Gifford*, R.

MICHIGAN: SENATORS.—Woodbridge N. Ferris, D; James C. Couzens, R. REPRESENTATIVES.—Robert H. Clancy, D; Earl C. Michener*, R; J. M. C. Smith*, R; John C. Ketcham*, R; Carl E. Mapes*, R; Grant M. Hudson, R; Louis C. Cramton*, R; Bird J. Vincent, R; James C. McLaughlin*, R; Roy O. Woodruff*, R; Frank D. Scott*, R; W. Frank James*, R; Clarence J. McLeod*, R.

MINNESOTA: SENATORS.—Hendrick Shipstead, F-L; Knute Nelson, R. REPRESENTATIVES.—Sydney Anderson*, R; Frank Clague*, R; Charles R. Davis*, R; Oscar E. Keller*, R; Walter H. Newton*, R; Harold Knutson*, R; O. J. Kvale, Ind.; Oscar J. Larson*, R; Knud Wefald, F-L; Thomas D. Schall*, R.

MISSISSIPPI: SENATORS.—Hubert D. Stephens, D; Pat Harrison, D. REPRESENTATIVES.—John E. Rankin*, D; B(ill) G. Lowrey*, D; Benj. G. Humphreys*, D; Jeff Busby, D; Ross A. Collins*, D; T. Webber Wilson, D; Percy E. Quin*, D; James W. Collier*, D.

MISSOURI: SENATORS.—James A. Reed, D; S. P. Spencer, R. REPRESENTATIVES.—M. A. Romjue*, D; Ralph F. Lozier, D; Jacob L. Milligant, D; Charles L. Faust*, R; Henry L. Jost, D; C. C. Dickinson, D; Samuel C. Majort, D; Sidney C. Roach*, R; Clarence Cannon, D; Cleveland A. Newton*, R; Harry B. Hawes*, D; Leonidas C. Dyer*, R; J. Scott Wolff, D; James F. Fulbright, D; Joe J. Manlove, R; Thomas L. Rubey*, D.

MONTANA: SENATORS.—B. K. Wheeler, D; Thomas J. Walsh, D. REPRESENTATIVES.—John M. Evanst, D; Scott Leavitt, R.

NEBRASKA: SENATORS.—Ralph B. Howell, R; George W. Norris, R. REPRESENTATIVES.—John H. Morehead, D; W. G. Sears, R; Edgar Howard, D; Melvin O. McLaughlin*, R; A. C. Shallenbeger, D; Robert G. Simmons, R.

NEVADA: SENATORS.—Key Pittman, D; Tasker L. Oddie, R. REPRESENTATIVE.—Charles F. Richards, D.

NEW HAMPSHIRE: SENATORS.—Henry W. Keyes, R; George H. Moses, R. REPRESENTATIVES.—William N. Rogers, D; Edward W. Watson*, R.

NEW JERSEY: SENATORS.—Edward I. Edwards, D; Walter E. Edge, R. REPRESENTATIVES.—F. F. Patterson, Jr., R; Isaac Bacharach*, R; Elmer H. Geran, D; Charles Browne, D; Ernest R. Ackerman*, R; Randolph Perkins*, R; George N. Segar, R; Frank J. McNulty, D; Daniel F. Minahan*, D; Frederick R. Lehlbach*, R; John J. Eagant, D; Charles F. X. O'Brien*, D.

NEW MEXICO: SENATORS.—Andrieus A. Jones, D; Holm O. Bursum, R. REPRESENTATIVE.—John Morrow, D.

NEW YORK: SENATORS.—Royal S. Copeland, D; Jas. W. Wadsworth, Jr., R. REPRESENTATIVES.—Robert L. Bacon, R; John J. Kindred*, D; George W. Lindsay, D; Thomas H. Cullen*, D; Loring M. Black, Jr., D; Charles I. Stengle, D; John P. Quayle, D; William E. Cleary*, D; David J. O'Connell, D; Emanuel Celler, D; Daniel J. Riordan*, D; Samuel Dickstein, D; Christopher D. Sullivan*, D; Nathan D. Periman*, R; John J. Boylan, D; W. Bourke Cockran (d. 1 March 1923), D; Ogden L. Mills*, R; John P. Carey*, D; Sol Bloom, D; Fiorello H. La Guardia*, R; Royal H. Weller, D; Anthony J. Griffin*, D; Frank Oliver, D; James V. Ganly*, D; J. Mayhew Wainwright, R; Hamilton

Fish, Jr., R; Charles B. Ward*, R; Parker Corning, D; James S. Parker*, R; Frank Crowther*, R; Bertrand H. Snell*, R; Luther W. Mott*, R; Homer P. Snyder*, R; John D. Clarke*, R; Walter W. Magee*, R; John Taber, R; Gail H. Stalker, R; Meyer Jacobstein, D; Archie D. Sanders*, R; S. Wallace Dempsey*, R; Clarence MacGregor*, R; James M. Mead*, D; Daniel A. Reed*, R.

NORTH CAROLINA: SENATORS.—Lee S. Overman, D; Furnifold McL. Simmons, D. REPRESENTATIVES.—Hallett S. Ward*, D; Claude Kitchin*, D; Charles L. Abernethy*, D; Edward W. Pou*, D; Charles M. Stedman*, D; Homer L. Lyon*, D; William C. Hammer*, D; Robert L. Doughton*, D; Alfred L. Bulwinkle*, D; Zebulon Weaver*, D.

NORTH DAKOTA: SENATORS.—Lynn J. Frazier, R; E. F. Ladd, R. REPRESENTATIVES.—Olger B. Burtness*, R; George M. Young*, R; James H. Sinclair*, R.

OHIO: SENATORS.—Simeon D. Fess, R; Frank B. Willis, R. REPRESENTATIVES.—Nicholas Longworth*, R; A. E. B. Stephens*, R; Roy G. Fitzgerald*, R; John L. Cable*, R; Charles J. Thompson*, R; Charles C. Keams*, R; Charles Brand, R; R. Clint Cole*, R; Isaac R. Sherwood*, D; Israel M. Foster*, R; Mell G. Underwood, D; John C. Speaks*, R; James T. Begg*, R; Martin L. Davey*, D; C. Ellis Moore*, R; John McSweeney*, D; W. M. Morgan*, R; Frank Murphy*, R; John G. Cooper*, R; Charles A. Mooney*, D; Robert Crossert, D; Theodore E. Burton*, R.

OKLAHOMA: SENATORS.—J. W. Harrelt, R; Robt. L. Owen, D. REPRESENTATIVES.—Everett B. Howard*, D; William W. Hastings*, D; Charles D. Carter*, D; Tom McKeown*, D; F. B. Swank*, D; Elmer Thomas, D; James V. McClintic*, D; M. C. Garber, R.

OREGON: SENATORS.—Robt. M. Stanfield, R; Charles L. McNary, R. REPRESENTATIVES.—Willis C. Hawley*, R; Nicholas J. Sinnott*, R; Elton Watkins, D.

PENNSYLVANIA: SENATORS.—David A. Reed, R; George W. Pepper, R. REPRESENTATIVES.—William S. Vare*, R; George S. Graham*, R; Harry C. Ransley*, R; George W. Edmonds*, R; James J. Connolly*, R; George A. Welsh, R; George P. Darrow*, R; Thomas S. Butler*, R; Henry W. Watson*, R; William W. Grist*, R; Laurence H. Watres, R; John J. Casey, D; George F. Brumm, R; William M. Croll, D; Louis T. McPadden*, R; Edgar R. Kiess*, R; Herbert W. Cummings, D; Edward M. Beers, R; Frank C. Sites, D; George M. Wertz, R; J. Banks Kurtz, R; Samuel F. Glatfelter, D; William I. Swoope, R; Samuel A. Kendall*, R; Henry W. Temple*, R; Thomas W. Phillips, Jr., R; Nathan L. Strong*, R; Harris J. Bixler*, R; Milton W. Shreve*, R; Everett Kent, D; Adam M. Wyant*, R; Stephen G. Porter*, R; M. Clyde Kelly*, R; John M. Morin*, R; James M. Magee*, R; Guy E. Campbell*, R.

RHODE ISLAND: SENATORS.—Peter G. Gerry, D; LeBaron B. Colt, R. REPRESENTATIVES.—Clark Burdick*, R; Richard S. Aldrich, R; Jeremiah E. O'Connell, D.

SOUTH CAROLINA: SENATORS.—Ellison D. Smith, D; Nath. B. Dial, D. REPRESENTATIVES.—W. Turner Logan*, D; James P. Byrnes*, D; Fred H. Dominicks*, D; John J. McSwain*, D; William F. Stevenson*, D; A. H. Gasque, D; Hampton P. Fulmer*, D.

SOUTH DAKOTA: SENATORS.—Peter Norbeck, R; Thomas Sterling, R. REPRESENTATIVES.—C. A. Christopher*, R; Royal C. Johnson*, R; William Williamson*, R.

TENNESSEE: SENATORS.—Kenneth D. McKellar, D; John K. Shields, D. REPRESENTATIVES.—B. Carroll Reece*, R; J. Will Taylor*, R; S. D. McReynolds, D; Cordell Huft, D; Ewin L. Davis*, D; Joseph W. Byrnes*, D; W. C. Salmon*, D; Gordon Browning, D; Finis J. Garrett*, D; Hubert F. Fisher*, D.

TEXAS: SENATORS.—Earle B. Mayfield, D; Morris Sheppard, D. REPRESENTATIVES.—Eugene Black*, D; John C. Box*, D; Morgan G. Sanders*, D; Sam Rayburn*, D; Hattin W. Sumners*, D; Luther A. Johnson, D; Clay Stone Briggs*, D; Daniel E. Garrett*, D; Joseph J. Mansfield*, D; James P. Buchanan*, D; Tom Connally*, D; Fritz G. Lanham*, D; Guinn Williams*, D; Harry M. Wurzbach*, R; John N. Garner*, D; C. B. Hudspeth*, D; Thomas L. Blanton*, D; Marvin Jones*, D.

UTAH: SENATORS.—Wm. H. King, D; Reed Smoot, R. REPRESENTATIVES.—Don B. Colton*, R; Elmer L. Leatherwood*, R.

VERMONT: SENATORS.—Frank L. Greene, R; Wm. P. Dillingham, R. REPRESENTATIVES.—Frederick G. Fleetwood*, R; Porter H. Dale*, R.

VIRGINIA: SENATORS.—Claude A. Swanson, D; Carter Glass, D. REPRESENTATIVES.—Schuyler Otis Bland*, D; Joseph T. Deal*, D; Andrew J. Montague*, D; Patrick Henry Drewry*, D; J. M. Hooker*, D; Clifton A. Woodrum, D; Thomas W. Harrison*, D; R. Walton Moore*, D; George C. Peery, D; Harry St. George Tucker*, D.

WASHINGTON: SENATORS.—C. C. Dill, D; Wesley L. Jones, R. REPRESENTATIVES.—John F. Miller*, R; Lindley H. Hadley*, R; Albert Johnson*, R; John W. Summers*, R; J. Stanley Webster*, R.

* Served in the 67th Congress.

† Served in a previous Congress.

WEST VIRGINIA: SENATORS.—M. N. Neely, D; Davis Elkins, R. REPRESENTATIVES.—Benj. L. Rosenbloom†, R; R. E. L. Allen, D; Stuart F. Reed*, R; G. W. Johnson, D; Thomas J. Lilly, D; J. Alfred Taylor, D.

WISCONSIN: SENATORS.—Robert M. LaFollette, R; Irvine L. Lenroot, R. REPRESENTATIVES.—Henry Allen Cooper*, R; Edward Voight†, R; John M. Nelson*, R; John C. Schafer, R; Victor L. Berger, S; Florian Lampert*, R; Joseph D. Becks*, R; Edward E. Browne*, R; George J. Schneider, R; James A. Frear, R; Hubert H. Peavey, R.

WYOMING: SENATORS.—John B. Kendrick, D; Francis E. Warren, R. REPRESENTATIVE.—Charles E. Winter, R.

History.—When the Harding Administration came into power it was embarrassed, Secretary Hughes has said, by a technical state of war; but within a few months thereafter treaties of peace were signed with Germany, Austria, and Hungary. These treaties received the assent of the Senate, and were ratified. The treaty with Germany was followed by an agreement for the determination of the amount of American claims, under the treaty, by a Mixed Commission,—a Justice of the Supreme Court of the United States, William Rufus Day, being appointed to serve as Umpire. An acute difference (the Secretary observed) with respect to the island of Yap in the North Pacific having special advantages as a cable-center was adjusted by a treaty with Japan relating to that island and the other islands held by Japan under mandate. The question of naval armament, i. e., the naval competition upon which the United States had entered with Great Britain and Japan, was dealt with at the Conference for Limitation of Armament, an account of which is given under the title WASHINGTON CONFERENCE. Nations interested in Far Eastern questions participated in that Conference; treaties were negotiated, binding those participants to respect the territorial and administrative integrity of China; and the Conference afforded an opportunity for good offices which enabled Japan and China to settle the Shantung controversy. Then also the Four-Power Treaty was negotiated, in relation to insular possessions and dominions in the region of the Pacific Ocean; and, as a part of this treaty, there was provision for abrogating the Anglo-Japanese Alliance. At the same Conference a treaty was negotiated, condemning the use of submarines against merchant vessels, and of asphyxiating or poisonous gases whenever it should become necessary for gentlemen to fight one another on land. Great Britain and Japan ratified all the Conference treaties before 30 Oct. 1922. Panama and Costa Rica were about to engage in war (for their territorial disputes, consult 'Encyclopedia of Latin America'). Peace was maintained upon the basis of the arbitral award of the Chief Justice of the United States. The Treaty with Colombia received the assent of the Senate. The President extended to the government of Peru and Chile an invitation to send their representatives to Washington to meet in conference for the purpose of dealing with the unfulfilled provisions of the Treaty of Ancón (See articles PERU and CHILE in the 'Encyclopedia of Latin America'). In Cuba, administrative reforms wrought by the Cuban Government in the interest of stability were not unrelated to the efforts of General Crowder, President Harding's Commissioner. A confer-

ence of the representatives of the Central American Republics was (with the approval of their Governments) called to meet at Washington. Withdrawal of the Military Government of the Dominican Republic was planned; and, under the agreement that had been made with that purpose, a provisional Dominican Government was established to superintend the election of more permanent incumbents.

Thus far, we have confined our attention to diplomatic activity on the part of the Administration,—an introductory gradient, simply, enabling us now to proceed more rapidly from event to event in 1922.

On 1 January a delegation at Washington, representing the Chita or Far Eastern Republic, asserted that a secret agreement in regard to Russia had been entered into by France and Japan. The existence of such a pact was denied, the following day, by representatives of France at Washington. Thus throughout the year, players of the Old World political games (eventually playing up to Labor's self-determination) were not silent, were not inactive in the United States. And this circumstance may be remembered rather constantly while we recall domestic as well as foreign happenings, affairs, and topics, such as the following: About a fortnight later, in the same city, a mass meeting of the Woodrow Wilson Foundation was held—from which several thousand persons marched, cheering, to the home of the distinguished American advocate of the League of Nations. On 17 January Secretary Hughes suggested maintenance of a Far Eastern "open door" by means of an International Board of Reference at the Chinese capital. On 25 January Cuba asked the government of the United States to withdraw marines from Camaguey. (Compare the reference to Cuba, above.) The following day, the Anti-Lynching Bill was passed by the House of Representatives, 230 to 119. On 31 January the bill authorizing the refunding of the \$11,000,000,000 foreign debt into securities maturing in 25 years or less was passed by the Senate, 39 to 26. The embargo on the shipment of arms to Mexico was ended by a joint resolution of Congress the same day. On 1 February the Washington Conference (see article so entitled) in plenary session approved treaties of the United States, Great Britain, France, Italy, and Japan, imposing limits on capital warships, restricting the employment of submarines, and abjuring misuse of poisonous gases. Marines in the service of the United States were withdrawn from Camaguey, Cuba, on 7 February.

The *Northern Pacific*, fastest American troopship during the war, was destroyed by fire, and four of the crew were lost, 8 February. On the following day 4,000 Navy Yard men who had been employed in building battle-ships were discharged, when the President's order suspending work of this character took effect, in execution of the treaty just mentioned. The United States and Japan signed the treaty relating to Yap, the North-Pacific island "having special advantages as a cable-center." 11 February. The President received, 20 February, a delegation of students representing 235 colleges, all supporting the naval disarmament plan. On the following day, the dirigible airship *Rome* built in Italy for the Army of the United States,

* Served in the 67th Congress.

† Served in a previous Congress.

exploded at Hampton, Virginia—11 survivors; 34 killed. An extradition treaty with Costa Rico, Central America, was ratified by the Senate the next day. And afterward nothing particularly noteworthy until we come to 27 February, — when the Supreme Court of the United States upheld the Suffrage Amendment to the Federal Constitution. On 28 February a plan for the establishment of an American merchant marine was outlined by President Harding, and a bill embodying the Administration's advice in this matter was introduced in the Senate and the House. On 1 March, at Bogotá, the treaty between the United States and Colombia, in relation to Panama, was ratified. On 8 March Secretary Hughes notified Italy that the United States would not take part in the proposed Genoa Conference. Suspension of mining operations in the unionized anthracite and bituminous coal-fields was ordered 21 March,—the order proceeding from headquarters of the United Mine Workers, in Indianapolis, and directing discontinuance of coal-production after ten days only should have passed. On 23 March the House of Representatives voted in favor of the Soldiers' Bonus Bill, 333 to 70. The coal miners' strike, at first affecting 500,000 men, began at midnight, 31 March. On 6 April,—this being the 13th anniversary of the discovery of the North Pole,—a memorial to Rear Admiral Robert E. Peary was unveiled at Arlington. On 10 April, Federal courts enjoined union organizers in the non-union coal regions of West Virginia. The following day, the Fordney-McCumber Tariff Bill was submitted to the Senate. On 16 April Marshal Joffre was the object of enthusiastic demonstrations at Chicago; and three days later he reached Washington and called on the President. That day, in the House of Representatives, it was proposed, with almost due formality, that the personnel of the navy should be limited to 86,000. On 22 April, Ambassador Houghton presented his credentials at Berlin. That day, at Princeton, Professor Harvey exhibited cold light, or luciferin. Marshal Joffre received the freedom of New York City on 24 April. At Charles Town, West Virginia, 25 April, several hundred striking miners were tried on charges of treason. Marshal Joffre and his family, returning to France, left New York, 29 April. On 1 May a railway bridge near a non-union mine was blown up by coal strike partisans. On 4 May Field Marshal Earl French arrived in New York. On 11 May the President signed a bill extending for two years from 30 June the three per cent immigration restriction act. On 13 May France invited the United States to join an international commission which should investigate the state of affairs in Russia. The same day the first German Ambassador to the United States, since the war, arrived at New York. The Federal Child Labor Law was declared to be unconstitutional by the Supreme Court, 15 May. On 19 May the Haiti —(Dominican Republic, or Santo Domingo) Independence Society announced at Washington that a passive war against the American occupancy and a boycott of goods from America were expedients to be adopted by Haiti. On 24 May a general horizontal reduction of 10 per cent in freight rates below the rates that went into effect 26 August 1920 was ordered by the Interstate Commerce Commission. In West Virginia

12 coal mines were dynamited—also on 24 May. On 30 May the Lincoln Memorial Building at Washington, D. C., was dedicated. The Supreme Court of the United States decided 5 June, that labor organizations are liable to be sued, and to judgment for damages in the event of injury to property during strikes; further, that strike funds are subject to levy. Next day, officials of 11 railway unions authorized a nation-wide strike vote, returnable 30 June. The wages of 400,000 railway employees were cut \$60,000,000, approximately, by the Railway Labor Board, and thus the total of such wage reductions was brought to \$110,000,000, approximately. Strike ballots, returnable 1 July, were therefore, on 11 June mailed to the 400,000 shopmen employed by the railways. On 13 June the estimate was published that the number of aliens to be admitted into the United States during the fiscal year was (see note of 11 May, above) limited to 357,903. On 16 June announcement was made of another cut in wages of railway employees, namely, \$26,500,000 a year subtracted from payments to 320,000 persons, chiefly in the clerical and station forces; the aggregate of reductions including this Labor Board ruling (effective 1 July) amounting to \$134,988,900. For the settlement of the Tacna-Arica dispute, Peru and Chile at this time requested the State Department's assistance. On 17 June President Harding received the Philippine mission's appeal for a grant of independence to the Filipino people. On 21 June striking miners attacked strikebreakers employed by the Southern Illinois Coal Company near Herrin, Illinois; and more than a score of the latter, who had surrendered, were shot, hanged, or beaten to death. Next day, the Filipinos desiring independence received an unfavorable reply. One day later, the House of Representatives concurred with the Senate in fixing the size of the army at 125,000 enlisted men and 12,000 officers. On 26 June the indefinite continuance of the military occupancy of Haiti, though with a reduction of the force, was recommended in a report of the special Senate committee appointed to investigate the American administration in Haiti and the Dominican Republic. On 28 June the factions in the coal miners' strike were summoned to a conference at the White House. But on 1 July nearly all of the 400,000 railway shopmen belonging to the union went on strike. Whereupon the Labor Board adopted, 2 July, a resolution outlawing shopmen who left their work. And on 3 July leaders of the factions in the coal strike, called into conference as mentioned above, adjourned after a stormy session which indicated an utter failure to reach an agreement. Two days later the President of the striking shopmen offered to consider any settlement the Labor Board might propose. And on 7 July that Board notified the shopmen that they could secure hearing for their grievances by returning to work. Next day, the Missouri National Guard was mobilized and Illinois troops made ready for service as a result of disorders connected with the railway shopmen strike. On 12 July anthracite mines operators accepted the President's arbitration plan, but operators and miners in the bituminous fields were unyielding.

The same day, at Washington, Secretary Hughes and Premier Mackenzie King of Canada were discussing a treaty for the permanent limitation of armament on the American-Canadian frontier. The next day, the President ordered the use of Federal troops to maintain order on railways. The coal miners rejected, 15 July, the President's arbitration plan to end the coal strike. However, two days afterward, that plan was, in principle, accepted by the operators in bituminous fields. On 18 July the President called on the Governors of 28 coal-producing States to guard miners and mines against interference or injury by the unions; and on the following day favorable response came to that appeal. National Guard troops were called out, 20 July, in Ohio and Pennsylvania to protect coal-miners who were willing to work. On 1 August the Association of Railway Executives rejected the President's plan to end the shopmen's strike. On 2 August leaders of the shopmen accepted the same plan. Whereupon there came to the President (naturally from those who accepted his proposals) a request for a conference. On 7 August, Secretary Hughes stated that the recognition of the Mexican administration would have to be preceded by a written guaranty that American holdings would not be subject to confiscation. On 9 August 1,300 engineers, firemen, conductors, brakemen, switchmen, and maintenance-of-way employees of the Elgin, Joliet and Eastern R. R. walked out in protest against the use of armed guards and of defective rail equipment. On 10 August an interstate joint conference of operators and workers organized in Cleveland for the settlement of the bituminous coal strike. In many cities members of rail brotherhoods protested, 11 August, against the armed guards, and 12 transcontinental trains were marooned, some in the Arizona desert. On 12 August railway shopmen declined the President's proposals that the seniority issue should be submitted to the Labor Board, if reinstatement of striking shopmen should be realized. The miners' strike, in bituminous coal fields, came to an end when, 15 August, operators from many coal-producing States and the leaders of the United Mine Workers of America agreed that work should be resumed at the old wage scale, and that a new wage scale should become effective 1 April 1923. On 19 August the Fordney-McCumber tariff bill was accepted by the Senate, 48 to 25. On 23 August the executives of railways refused to take the strikers back with full seniority rights. On 24 August Secretary Hughes and a number of delegates sailed for Rio de Janeiro, to represent the government of the United States at the Brazilian Centennial Exposition. On 31 August the Senate voted, 47 to 22, in favor of the Soldiers' Bonus Bill. On 1 September a temporary injunction restraining the shopmen from interfering in any manner whatever in the operation of the railways was granted by Judge Wilkerson, in Chicago. (The order was subsequently extended.) Anthracite mines were reopened 10 September, but there was said to be a shortage of skilled labor, and the mines were not in good condition. On 15 September the House of Representatives adopted the conference report on the Soldiers' Bonus Bill.

President Harding vetoed that measure on 19 September. The Pennsylvania and the New York Central, 15-19 September, concluded arrangements with the men to end the rail shop strike. Shopcraft unions of the New York Central agreed, 19 September, that shopmen should return to work within 30 days, accepting the wage cut of 1 July. On 20 September the Senate sustained the President's veto of the Soldiers' Bonus Bill, which the House had repassed, 258 to 54. Next day, the President signed the Fordney-McCumber Tariff Bill. On 23 September the special grand jury investigating the Herrin affair made its final report, returning 214 indictments for murder, attempt to commit murder, or for other offenses. On 27 September the obligation to protect American interests in Near East, and to carry on relief work there, claimed the attention of the Navy Department, which ordered a squadron of 12 destroyers and one supply ship to be prepared to go to Constantinople. On 4 October the President of the shopmen's union stated that the shopmen's strike had been settled on 83 railroads, extending 65,000 miles, approximately. On 23 October the governments of Nicaragua, Honduras, Costa Rica, Guatemala and Salvador were invited by Secretary Hughes to send plenipotentiaries to a conference at Washington. Five days later the United States received an invitation, presented to the State Department by a joint Allied committee, to participate in the Near East conference to be held in November at Lausanne. And on 31 October the State Department announced that the American government would not participate, but would send official observers. (The chief observers selected were the Ambassador to Italy and the Minister to Switzerland; and the American High Commissioner at Constantinople was associate observer.) Ex-Premier Georges Clemenceau declared, 21 November, in an address in New York, that Germany was again preparing for a war in which Russia and Turkey should or would serve as the Fatherland's allies. On 22 November the American Federation of Labor declined an invitation to participate, with the International Federation of Trade Unions, in a general labor anti-war conference at The Hague. On 13 December the House Appropriations Committee, when reporting the Naval Appropriation bill, requested the President to negotiate with Great Britain, France, Japan, and Italy for extension of treaty limitations to swift cruisers, submarines, and aircraft—in which directions, the committee report asserted, "competition is on again."

MARRION WILCOX.

UNITED STATES ARMY. See ARMY OF THE UNITED STATES.

UNITED STATES BUREAU OF EDUCATION. See EDUCATION, UNITED STATES BUREAU OF.

UNITED STATES BUREAU OF EFFICIENCY. See EFFICIENCY, UNITED STATES BUREAU OF.

UNITED STATES-COLOMBIAN TREATY. See PEACE AND ARBITRATION, INTERNATIONAL.

UNITED STATES DEPARTMENTAL REORGANIZATION. See EFFICIENCY, UNITED STATES BUREAU OF.

UNITED STATES MERCHANT MARINE. See MERCHANT MARINE OF THE UNITED STATES.

UNITED STATES MILITARY ACADEMY, a national institution for educating officers for the Regular Army. It was founded in 1802 and is located at West Point, N. Y. In 1922-23 the faculty numbered 12 and the cadets approximately 1,260. The Academy's property is valued at \$23,105,225. Being a component part of the Army, the Academy is maintained entirely by Federal appropriations. The appropriation granted it in the Military Academy Appropriation bill for 1922-23 totaled \$2,059,629. Brig.-Gen. Fred W. Sladen is superintendent.

UNITED STATES NAVAL ACADEMY, a government institution for the education of officers for the Navy, founded 10 Oct. 1845 and located at Annapolis, Md. In 1922-23 the faculty numbered 251 members, while the number of midshipmen enrolled was 2,395. The institution's property is valued at \$16,000,000. It is supported entirely by government appropriations, the appropriation for 1922-23 being \$2,229,461, not including the pay of officers attached to the Academy. Rear Admiral Henry B. Wilson, United States Navy, is president.

UNITED STATES NAVY. There is a strong probability that any future war in which the United States may be involved will be one in which the issues will be largely decided on the sea or in the air. Not many years ago America's great naval writer, Mahan, made clear for the first time the tremendous influence which naval activities have exerted upon the history of the world. The present post-war period cries aloud for some equally authentic exponent of the reverse of Mahan's deductions who will convincingly reveal what result the history of the Great War will have upon naval science. The Washington Conference of 1921-22 resulted in an agreement among the leading naval powers for an era of comparative economy to be achieved through a period of mutual limitation in the building of fighting ships. This halt in the headlong race for the expansion of the fleets along the lines of pre-war building programs was welcomed as a sign of peace by nations weary of war and taxes. It may, however, be well to recall how heavy has been the cost of long drawn out wars which might have been much briefer and cheaper if adequate preparation had made prompt and efficient action possible. Some shrewd observers of the Conference have suspected that when the experiences of 1914-18 shall have been thoroughly digested we may conclude that the naval warfare of the future is likely to demand fleets radically different from those which fought in that war. Some of these critics believed that the great powers which had been competing in the building of superdreadnoughts at a cost of from 14 to 18 million dollars each welcomed an opportunity to mark time until it has become more clearly determined just what types will be the most efficient for the sea fighting of the future. A year ago the *Ostfries-*

land and other former German ships were the targets of an air attack off the Virginia Capes when it became evident that one of the major missions of the air forces in the future will be the attack upon hostile fleets. It was demonstrated conclusively that aircraft bombs could put out of commission and actually sink any naval vessel that has yet been launched. Of course it will not do to accept too confidently the results of these peace time experiments, for the bombers were meeting no resistance from the objects of their attack. We all recall the supreme pre-war confidence of the American artillery service in its 3-inch field piece which performed beautifully on the artillery practice ranges. Not one of those guns was used in France where actual battlefield conditions showed them to be utterly useless. However the efficiency of the service of the air is constantly improving and there is strong reason to question the ability of battleships to resist successfully such a bombing attack as will be likely to come out of the skies a few years hence.

It may not be inopportune to draw a lesson from a very old historic source. Rome was undoubtedly inferior to Carthage in the naval science of their day and yet was able to triumph completely over the better manoeuvred and better built fleets of her rival. The introduction of a clumsy but efficient device for boarding more than offset the superior nautical skill of the Carthaginian sailors. Carthage had failed to visualize anything beyond the quinquereme and the Roman corvus changed the history of the world because the previous masters of the sea were unable to revise their naval architecture and tactics sufficiently to cope with the new factor.

Naval science in our day has adopted as its common denominator the super-dreadnought, a logical lineal descendant of the Carthaginian quinquereme which had seemed to its designers to be the invincible successor of the older trireme. So far as the world at large has been permitted to observe the pre-war dependence upon the heavy unit as the essential factor in the fighting fleet continues to fill the vision of naval constructors. It may require the younger generation of a decade hence to revise their program. The ten year vacation prescribed by the Washington Conference should afford ample opportunity for the experts to devise efficient weapons less costly than the great floating fortresses which have been blinding the vision of naval designers for a generation.

When it was fleet against fleet in the great war there can be no question that victory perched on the side of the heaviest and the fastest. In the operations against land fortifications battleships have never seemed so inefficient. They dared not attack Heligoland and they failed signally at the Dardanelles. Zeebrugge proved safe from all but light raiders. Doubtless it will always be necessary for warring nations to drive from the seas the naval forces of an enemy in order to protect the merchant marine and to accomplish that will require the best naval fighting machinery. It is, however, to be remembered that after the high seas fleets of the Germans had been destroyed

the ocean roadways continued to be decidedly dangerous for both merchantmen and warships. The submarine threatened both and the efficacy of the threat is illustrated by a comparison of tonnage losses among war ships which up to Armistice Day totalled 803,000 displacement tons for the Allies against 415,000 for the Germans (not including the Scapa Flow losses). The total tonnage sunk during the war by German submarines amounted to approximately 15,000,000 tons. It may readily be conceded that had Germany possessed greater coastal base advantages the menace of the submarine to the heavy warship might have been even more serious. In this connection it will be of interest to consult the following statistics:

WARSHIP LOSSES 1914-18

	England	United States	France	Italy	Japan	Germany	Austria
Battle ships	13	3	4	3	1	1	3
Battle cruisers	3	1	5	2	4	24	2
Cruisers	25	1	5	2	4	24	2
Monitors	6	2	14	10	3	72	3
Destroyers	64	2	14	10	3	72	3
Torpedo boats	10	1	8	5	1	51	4
Submarines	59	1	14	8	...	216	8
Small craft	27	...	9	...	...	...	...

The naval pre-war budgets were in sterling.

	£
Great Britain	46,309,000
France	18,452,000
Australia	2,456,000
Italy	9,068,000
Russia	22,817,000
United States	29,464,000
	<u>128,566,000</u>
Germany	24,012,000
Austria	3,100,000
	<u>27,112,000</u>

It appears from a consideration of the above facts that the Germans were able on a budget of 27 million pounds sterling to develop a naval fighting organization which seriously menaced the navies which the allies had prepared at an annual cost nearly five times as much. So far as their weight in the determination of the war was concerned the Germans might better have converted all of their heavy ships into sea going submarines which had they been built and ready for service in the summer of 1914 would have been far more dangerous to the Allies than were their battleships and cruisers. The squadrons of American destroyers which escorted the fleets of transports in 1917-1918 were much more suited to that duty than the best battleships and cruisers. They defended both themselves and their convoys against enemy submarines far more efficiently than had cruisers and battleships in the earlier years of the war. It seems safe to assume that the sentiment in the United States will always approve the maintenance of an efficient defensive fleet on both

exposed coasts. The country has inherited the group instinct to hold apart from other nations and will doubtless always demand a navy competent to defend that desired aloofness. The naval strategist will defend the fighting ships of great offensive power and cruising capacity by pointing out the desirability of carrying the war to the opponents' coasts and harbors instead of awaiting his attack upon our own. If we are to maintain our far-flung island possessions and also defend the merchant marine which the country requires we must be able to keep our warships out on the high seas and they must be able to outsail and outfight any rival. Thus far the weight of expert naval opinion as to the means for attaining these purposes is decidedly in favour of the balanced fleet whose units shall include all types of warships for service afloat, in the air, or under water. The merchant marine which will require their protection has increased from a total tonnage of 5,164,839 in 1900 to 18,462,967 in 1922. Considerably more than half of our merchant marine is engaged in foreign trade and fisheries. The Navy Department recognizing its dependence upon the support of merchant auxiliaries in wartime is giving every possible aid to the development of the American Merchant Marine. Opportunity is freely offered to observe the methods developed at the naval testing plants for the use of fuel oil as well as systems devised for the most advantageous handling of merchant ships in the various ports of the United States and the island possessions.

The unavoidable haste in the assignment of recruits to the naval forces at the time of the World War naturally resulted in numerous errors of classification and there is evident need now for some organized effort to enroll and classify young men suited by inclination and vocational training for naval service. The records of the Navy Department show only those who have had service. There is no record of the generation now maturing many of whom would be suitable to and valuable in this service although meanwhile through geographical location debarred from joining either the Federal Naval Reserve or the Naval Militia. This situation appears to offer an excellent opportunity for a valuable patriotic service on the part of some national organization interested in the growth of the country and its naval defenses. Should the misfortune of another great war occur it is most unlikely that America would enjoy immunity for a leisurely preparation. There would more probably be sudden need for increasing the naval personnel and the recruits ought to be chosen from the ranks of those already qualified in some degree at least for this service.

In 1922 practically every maritime country in the world showed a decrease in ship building and there is now but a fraction of our working population employed in this industry. The 1922 decrease was sharpest in American yards where the production declined to 119,138 gross tons as against 1,006,413 gross tons in 1921. Launchings in Germany in 1922 amounted to 525,829 gross tons and in the same year Great Britain and Ireland produced 1,031,081 gross tons. In

1913 American shipyards produced only 8 per cent of the world total but in 1917 57 per cent of the aggregate output was American. In 1920 American yards turned out 40 per cent of the world's total. In 1921 23 per cent and in 1922 less than 5 per cent of the total in a year when throughout the world the production showed a loss of almost 900,000 tons below the last pre-war year, 1913. In 1913 German launchings were nearly 1,500,000 tons less than those of Great Britain but in 1922 Germany was within 500,000 tons of the British record and produced nearly five times the American total. The figures indicate a serious shrinkage in American physical equipment as well as personnel adaptable to naval needs in an emergency.

Deep Sea Explorations.—In December 1922 two naval vessels were assigned for sounding operations off the west coast of the United States which may reveal the cause of earthquakes. Under the direction of the hydrographic office of the Navy Department the destroyers *Hull* and *Corry* were fitted with apparatus for measuring ocean depths by sound waves and had aboard scientific observers from the Carnegie Institution of Washington. One of the scientific theories regarding the successive earthquakes of the Pacific coast region has been based upon the belief that there is in progress a receding movement of the contiguous coast of California. Both the Carnegie Institution and the Navy Department having studied the possibilities of the sonic depth recorder believe that developments of great importance may result from the work now beginning. The apparatus installed at a cost of about \$18,000 for each of the two vessels consists of a standard navy sound receiver; Submarine Signal Company's Fessenden type of sound oscillator for transmitting sound signals; and navy sonic depth finder recently developed at the engineering experiment station, Annapolis. The destroyer *Stewart* recently gave the new sounding device an exhaustive service test in a voyage from Newport to Chefoo, China via the Mediterranean and Suez when daily reports on soundings obtained were communicated by radio to the Navy Department at Washington. During the whole of the cruise the apparatus worked without apparent error and in nine days between Newport and Gibraltar over 900 soundings were taken at frequencies varying between 20 and two minutes while the ship steamed steadily at 15 knots. During a two hour halt it was shown that successful soundings can be taken at intervals of one minute in the deepest water. The deepest hole found on this cruise was 3,200 fathoms, sounded in about four minutes as compared with about three hours which would have been required to obtain the same result at that depth by the old lead method of sounding. The outline of the bottom of the sea was minutely recorded between Josephine and Gettysburg Banks. The sea bottom there was found to consist of an extensive plane bordered by mountains and table lands some of which rose 4,000 feet above the plane. Several deep depressions hitherto unshown on the charts were discovered and positive depth data secured where only negative data had been recorded near the Azores.

The thorough exploration of the sea floor is made possible by the use of this new device which seems likely to revolutionize piloting and navigation. The universal sounding apparatus was designed principally by Harvey C. Hayes, physicist of the Naval Engineering Experiment Station who accompanied the *Stewart* to Gibraltar. The sound transmitter develops a high-frequency vibration in a diaphragm which is in contact with sea water and the high pitched note carries many miles.

Two methods of obtaining soundings will be used by the vessels engaged in the Pacific coast work. One for depths up to 90 fathoms and the other for greater depths. The first, called the angle method, uses the ships propellers as a sound source and the echo is received in the compensator from the sound receivers. The depth scale is graduated by obtaining a number of points on the curve when the set is calibrated after which the depths may be read directly off the scale. The second, or deep water method, uses the speed of sound in water as a means of obtaining the depth. An impulse is sent out on the oscillator and the elapsed time between the sending and receiving of the oscillation is automatically recorded when the echo completes the electrical circuit.

The Washington Conference.—The Washington Conference of 1921-22 sought to secure a harmonious agreement among the five principal sea powers for the limitation of naval armament. The agreement upon a 5-5-3 capital-ship navy met with prompt ratification in Great Britain, the United States and Japan in 1922. The year 1923 dawned without the expected official concurrence of France and Italy although favourable action in both countries had been promised by Poincaré for France and Mussolini for Italy. The sincerity of the signatory powers was demonstrated by prompt measures on the part of all three for the scrapping of surplus warships and the suspension of such parts of their building programs as was required by the treaty. Japan assigned a considerable part of the savings amounting in this year's budget to about \$58,500,000 to an increased support of compulsory public education, returned the Shantung Peninsula to China, proceeded with the evacuation of Saghalien and came to an amicable agreement with the United States as to the island of Yap. No man can detect anywhere on the most clouded political horizon a suggestion that any sound interest of either of the three agreeing powers has suffered the slightest jeopardy because of the reduction of warlike navies. At the outset of the conference the United States proposed not only to stop the ruinous race of competition in the building of battle ships and battle cruisers but to destroy about 40 per cent of the existing strength of capital ships of the principal naval powers in such a way as to leave the relative proportions of naval strength unchanged and that proposal became substantially the final agreement. No restrictions were placed upon first line cruisers, light cruisers, destroyer leaders, destroyers, first line submarines and fleet submarines. Naval intelligence indicates that in ships building and projected among these types the position of the five powers is as follows:

	Great Britain	United States	Japan	France	Italy
First line light cruisers..	None	10 = 75,000 tons	15 = 81,900 tons	3 = 24,000 tons	2 = 16,000 tons
First line cruisers.....	None	10 = 75,000 tons	None	None	None
First line destroyers.....	3 of 3,725 tons	3 = 3,645 tons	50 = 58,500 tons	12 = 16,800 tons	12 = 11,680 tons
Destroyer leaders.....	1 of 1,750 tons	None	None	6 = 14,400 tons	6 = 12,270 tons
First line submarines....	* 4 of 5,800 tons	36 = 31,561 tons	52 = tonnage unknown; 23 = 30,394 tons	12 = 13,200 tons	4 = 2,600 tons
Fleet submarines.....	None	3 = 6,375 tons	None	None	None

It is believed that the above construction with vessels retained will make Japan superior to the United States in light cruisers and submarines.

The completed capital ships to be scrapped by the United States are: *The Virginia, New Jersey, Rhode Island, Georgia, Nebraska, Connecticut, Louisiana, Vermont, Minnesota, Kansas, New Hampshire, Michigan, South Carolina, and the Delaware* or the *North Dakota*. The *Kentucky* and *Ohio* while not listed under the terms of the treaty are understood to be among the completed capital ships to be scrapped. The old battleship *Iowa* was sunk in gunnery practice during the fleet maneuvers in Panama Bay on 22 March 1923. The *Maine* and the *Missouri* have been sold. The two most advanced battle cruisers, the *Lexington* and the *Saratoga* are to be converted into airplane carriers.

The United States had under construction at the time of the conference seven battle ships and four battle cruisers on which work was suspended.

The battleship *Washington* under construction by contract and launched is to be scrapped. The capital ships to be retained by the United States are the following:

	Tonnage	Main battery		Year completed	Cost
		No.	In.		
<i>Maryland</i>	32,600	8	16	1920	.....
<i>California</i>	32,300	12	14	1919	.....
<i>Tennessee</i>	32,300	12	14	1919	\$18,437,154
<i>Idaho</i>	32,000	12	14	1917	14,443,957
<i>New Mexico</i>	32,000	12	14	1917	15,988,216
<i>Mississippi</i>	32,000	12	14	1917	14,625,979
<i>Arizona</i>	31,400	12	14	1915	12,993,579
<i>Pennsylvania</i>	31,400	12	14	1915	13,793,009
<i>Oklahoma</i>	27,500	10	14	1914	11,770,946
<i>Nevada</i>	27,500	10	14	1914	11,555,410
<i>New York</i>	27,000	10	12	1912	11,365,808
<i>Texas</i>	27,000	10	14	1912	11,179,195
<i>Arkansas</i>	26,000	12	12	1911	10,207,090
<i>Wyoming</i>	26,000	10	12	1911	10,242,362
<i>Florida</i>	21,825	10	12	1910	10,357,628
<i>Utah</i>	21,825	10	12	1909	8,954,076
<i>North Dakota</i>	20,000	10	12	1908	8,685,928
<i>Delaware</i>	20,000	10	12	1909	8,458,978
Total tonnage	500,650				

On the completion of two new ships of the *West Virginia* class and the scrapping of the *North Dakota* and *Delaware* the total tonnage of capital ships retained by the United States will be 525,850 tons; when similar changes among the retained capital ships of Great Britain have been completed the total British

tonnage for this class will be 558,950 tons. The similar tonnage for Japan will be 301,320 tons. Vessels completed after the signing of the treaty are to be rated at their displacement tonnage when in the standard condition as follows: Fully manned, engined and equipped ready for sea including all armament and ammunition, equipment, outfit, provisions and fresh water for crew, miscellaneous stores and implements of every description that are intended to be carried in war, but without fuel or reserve feed water on board. Vessels previously completed are to retain their present ratings of displacement tonnage in accordance with their national system of measurement. In January 1923 Congress voted \$6,500,000 to be made immediately available for modernizing by increasing the elevation and range of turret guns of the following battle ships: *Florida, Utah, Arkansas, Wyoming, Pennsylvania, Arizona, Oklahoma, Nevada, New York, Texas, Mississippi, Idaho* and *New Mexico*.

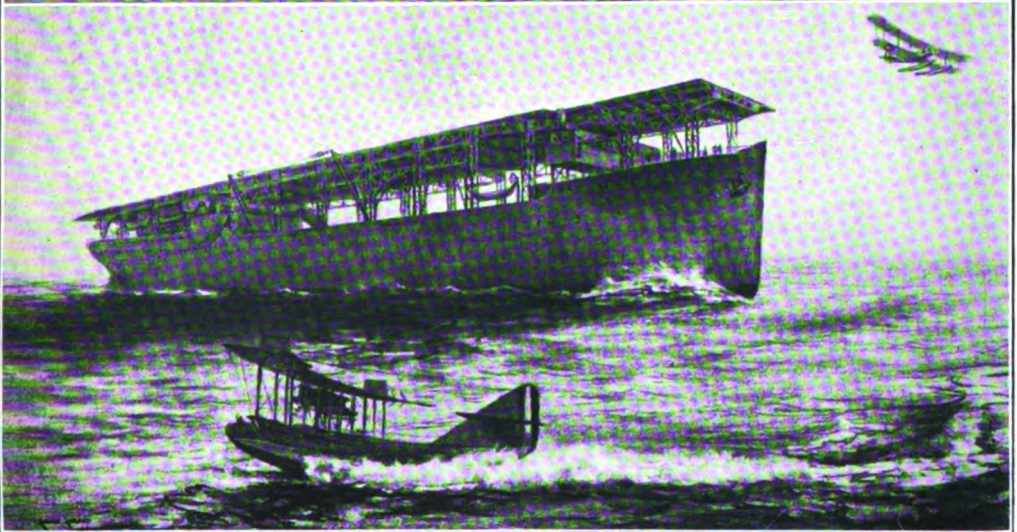
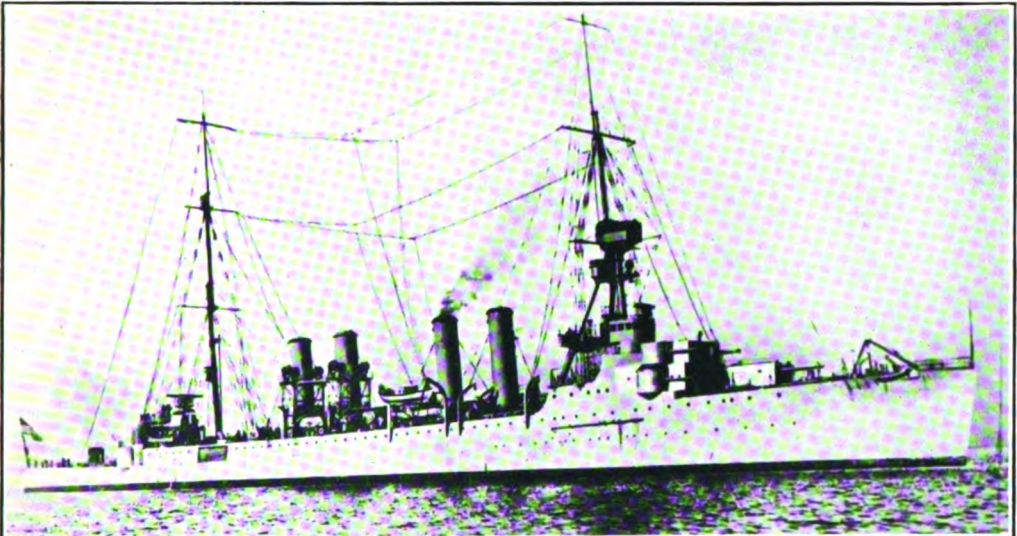
(Since to increase the range and elevation of the turret guns was believed to involve a breach of the Washington naval treaty the matter was held in abeyance.)

At the same time the House Naval Committee voted to report favorably a bill increasing the authorized cost of the two battleships under construction—the *Colorado* and the *West Virginia*—and the ten scout cruisers now building.

The first of these new cruisers to be completed was the *Omaha* ordered to the Vashon Island course in Puget Sound for a six hour trial run early in February 1923. A remarkable feature of the *Omaha* is the enormous power of the four Westinghouse turbines that propel her. When operating at full capacity these engines develop a total of 90,000 horsepower. These new cruisers are designed to attain a high speed of 35 knots, have a displacement of 7,500 tons and carry batteries of twelve 6-inch guns. They are practically exaggerated destroyers with a beam of 53 feet, mean draft of 13 feet 6 inches, and length over all of 556 feet giving a ratio of beam to length of one to ten.

The Navy Department points to a serious deficiency in the total lack of mine-laying submarines in the United States Navy. War statistics indicate that a very large percentage of the destruction accomplished by submarines can be credited to this type of vessel. Mine laying is an important factor in modern war and can be carried out more safely and effectively by the submarine than any other type of vessel. Of another important type—the scout submarine—there are but three under construction and these admittedly are not of the most approved design.

UNITED STATES NAVY



1. U. S. Scout Cruiser Omaha

International Newsreel

2. U. S. Battleship California

3. U. S. Aeroplane Carrier Langley

The number of officers, commissioned and warrant, in the Navy as of 28 Dec. 1922 was as follows:

	Regular	Additional	Total
Total line.....	4,235	53	.....
Total staff.....	1,930	7	.....
Total chief warrant.....	479	.....	.....
Total warrant.....	887	.....	.....
	<u>7,531</u>	<u>60</u>	<u>7,591</u>

The enlisted strength now authorized is 86,000 men. In 1921 the enlisted strength was 119,205. The following figures indicate the approximate average length of service of officers in each grade and corps before promotion to next higher grade:

Line from —	Years	Total service to date since entry
Captain to rear admiral.....	6	36 yrs., 2 mos.
Commander to captain.....	4	26 yrs., 4 mos.
Lieutenant-Commander to commander.....	4	20 yrs., 8 mos.
Lieutenant to Lieutenant-Commander.....	4	18 yrs., 6 mos.
Lieutenant (j. g.) to lieutenant.....	2½	10 yrs., 7 mos.
Ensign to lieutenant (j. g.).....	2½	6 yrs., 7 mos.
Medical corps, from —		
Commander to captain.....	4½	23 yrs., 3 mos.
Lieutenant-commander to commander.....	6½	18 yrs., 7 mos.
Lieutenant to lieutenant-commander.....	5	11 yrs., 10 mos.
Lieutenant (j. g.) to lieutenant.....	2½	3 yrs., 1 mo.
Dental corps, from —		
Lieutenant to lieutenant-commander.....	4	6 yrs., 9 mos.
Lieutenant (j. g.) to lieutenant.....	2½	3 yrs., 1 mo.
Supply corps, from —		
Commander to captain.....	4	22 yrs., 9 mos.
Lieutenant-commander to commander.....	5	18 yrs., 6 mos.
Lieutenant to lieutenant-commander.....	3½	13 yrs., 6 mos.
Lieutenant (j. g.) to lieutenant.....	2½	3 yrs., 4 mos.
Ensign to lieutenant (j. g.).....	2½	3 yrs., 1 mo.

Following is a table showing the number of appointments of midshipmen allowed to the Naval Academy as now provided by law and as limited (but not repealed) by the appropriation act for the fiscal year of 1924:

	As provided by present law, Class entering, 1923	As limited by appropriation, Class entering, 1924
Each Senator.....	5	3
Each Representative.....	5	3
Each Delegate in Congress.....	5	3
Governor of Porto Rico.....	1	1
Resident Commissioner of Porto Rico.....	5	1
District of Columbia.....	5	2
Enlisted personnel (annually).....	100	100
At-large by President (annually).....	15	15
From Philippines for each naval academy class.....	<u>1</u>	<u>1</u>

The appropriation for the United States Navy for 1923 amounted to \$298,324,265.25. The

budget for 1924 submitted to Congress with the approval of the President called for \$289,-880,993 and provides for the maintenance of the present enlisted personnel of 86,000 men, the upkeep of the ships now in commission and will increase the steaming radius of capital ships from 13,080 miles to 16,200 miles and other ships proportionately, will provide for training of 2,000 officers and 7,000 men in the Naval Reserve, will make provision for continuing new ship construction in privately owned yards. It will necessitate reduction in speed on construction of several light cruisers and submarines.

Reorganization of the Fleet.—In December 1922 a general plan for the organization of the navy afloat was embodied in a general order approved by the President and announced at the Navy Department. The fleet is organized under the title "The United States Fleet" and one commander in chief will command all the various elements. The principal titles of the organization are: The Battle Fleet, The Scouting Fleet, The Control Force, and The Fleet Base Force.

The naval policy proposes that the various units of the fleets shall meet annually for three months for drills, manœuvres and gunnery exercises. For the winter of 1922-23 Panama Bay was selected as place of assembly of the newly organized fleet. Admiral Hilary P. Jones commanding the Atlantic fleet became, for all purposes, the commander in chief of the United States fleet in peace and in war whether the units of the fleet are in juncture or apart. The Battle Fleet which would oppose any enemy main fleet in war was in command of Admiral E. W. Eberle with the title Commander in Chief, Battle Fleet which will be composed of battleship Divisions under a vice admiral, light cruiser divisions, destroyer squadrons, aircraft squadrons, and such submarine divisions as may be assigned.

The Scouting Fleet whose duty in war is to locate the enemy main fleet and later unite with the Battle Fleet to join in action was commanded by Vice-Admiral J. D. McDonald with the title of commander Scouting Fleet composed of battleship divisions, light cruiser divisions, destroyer squadrons, submarine divisions, aircraft squadrons and train.

The Control Force aids in the seizure of bases and exercises control of these when gained. It is then under command of a Rear Admiral with the title commander, Control Force, and is composed of cruiser divisions, destroyer squadrons and mine squadrons.

The Fleet Base Force defends fleet bases, and is commanded by Rear-Admiral J. V. Chase

THE NAVAL EXPENDITURES BY THE PRINCIPAL SEA POWERS IN RECENT YEARS

	Great Britain	United States	Japan	France	Italy
1912-1913.....	\$224,443,296	\$129,787,233	\$46,510,216	\$81,692,832	\$41,893,420
1913-1914.....	237,530,459	136,858,301	48,105,152	90,164,625	49,550,147
1914-1915.....	260,714,275	142,959,092	69,111,653	123,828,872	56,920,440
1915-1916.....	1,001,202,544	152,821,540	63,000,000	.....	135,736,207
1916-1917.....	1,020,003,279	261,403,176	73,000,000	.....	161,482,062
1917-1918.....	1,119,944,455	1,214,995,767	85,000,000	301,910,093	226,061,278
1918-1919.....	1,670,456,135	1,915,155,835	125,000,000	445,802,202	229,779,176
1919-1920.....	787,644,050	1,078,099,485	150,000,000	174,829,243	45,711,604
1920-1921.....	441,861,500	757,486,849	187,207,522	199,668,287	78,389,226
1921-1922.....	<u>406,033,504</u>	<u>425,848,079</u>	<u>248,519,224</u>	<u>181,509,980</u>	<u>81,068,748</u>

VESSELS IN THE UNITED STATES NAVY, 1922

	In service		Under construction		Authorized but not yet placed		Total	
	Number	Displacement	Number	Displacement	Number	Displacement	Number	Displacement
Battleships, first line.....	18	500,650	9	357,000	.....	.....	27	857,650
Battleships, second line.....	14	215,240	.....	.....	.....	.....	14	215,240
Battle cruisers, first line.....	.....	.....	6	261,000	.....	.....	6	261,000
Cruisers, second line.....	11	139,450	.....	.....	.....	.....	11	139,450
Light cruisers, first line.....	.....	.....	10	75,000	.....	.....	10	75,000
Light cruisers, second line.....	12	43,175	.....	.....	.....	.....	12	43,175
Aircraft carrier, second line.....	1	12,700	.....	.....	.....	.....	1	12,700
Mine layers, second line.....	4	16,096	.....	.....	.....	.....	4	16,096
Destroyers, first line.....	278	330,272	3	3,645	12	.....	293	333,917
Destroyers, second line.....	21	15,582	.....	.....	.....	.....	21	15,582
Light mine layers.....	14	16,674	.....	.....	.....	.....	14	16,674
Submarines, first line.....	59	37,120	34	29,575	.....	.....	93	66,695
Submarines, second line.....	27	10,645	.....	.....	.....	.....	27	10,645
Fleet submarines, first line.....	3	.....	3	.....	6	.....	12	.....
Eagles.....	54	27,000	.....	.....	.....	.....	54	27,000
Submarine chasers.....	43	3,311	.....	.....	.....	.....	43	3,311
Gunboats.....	9	6,355	1	1,575	.....	.....	10	7,930
Yachts.....	9	9,697	.....	.....	.....	.....	9	9,697
Destroyer tenders.....	8	87,320	2	21,200	.....	.....	10	108,520
Submarine tenders.....	7	44,443	1	10,000	.....	.....	8	54,443
Aircraft tenders.....	1	11,000	.....	.....	.....	.....	1	11,000
Repairships.....	2	25,170	1	10,000	.....	.....	3	35,170
Storeships.....	6	66,385	.....	.....	.....	.....	6	66,385
Colliers.....	10	140,560	.....	.....	.....	.....	10	140,560
Oilers.....	20	283,026	.....	.....	.....	.....	20	283,026
Ammunition ships.....	2	21,200	.....	.....	.....	.....	2	21,200
Cargo ships.....	9	80,670	.....	.....	.....	.....	9	80,670
Transports.....	3	36,800	.....	.....	1	10,000	4	46,800
Hospital ships.....	4	35,917	.....	.....	.....	.....	4	35,917
Fleet tugs.....	40	34,211	.....	.....	.....	.....	40	34,211
Mine sweepers.....	47	44,650	.....	.....	.....	.....	47	44,650
Miscellaneous.....	6	48,386	.....	.....	.....	.....	6	48,386
Unclassified.....	32	101,634	.....	.....	.....	.....	32	101,634
Grand total.....	774	2,445,339	70	768,996	19	10,000	863	3,224,334

NOTE.—Displacement not included for 12 destroyers, 12 fleet submarines, 1 tug, 3 unclassified.

with the title Commander, Fleet Base Force. It is composed of mine squadrons, destroyer squadrons, aircraft squadrons and train.

It is believed that this plan meets the modern demand for a peace time organization which will be practical in war time and further provides for one commander in chief of the United States Fleet for strategy and tactics, not assigned to the command of any sub-division but free to exercise general supervision. The Control and Fleet Base Forces will be in peace time largely skeleton organizations but prepared for rapid expansion in time of war.

The Naval War College.—In December 1922 Col. Theodore Roosevelt, assistant secretary of the Navy, announced that it had become vitally necessary that the scope of the Naval War College should be enlarged to embrace a close co-operation with the General Staff College of the Army. A conference of the ranking officers of the Navy was called and a tentative plan drawn up by Rear-Admiral W. V. Pratt who is a graduate of both the Naval War College and the Army War College. This plan at the end of January 1923 was in course of development but is essentially based upon the ever growing importance of the position of the United States in international world politics with the resultant need for a broader knowledge among naval officers and a thorough grounding in the principles of tactics and strategy.

EDWIN WINTHROP DAYTON,
Lieut-Colonel, Staff Specialist, United States
Army Reserve Corps.

UNITED STATES PUBLIC HEALTH SERVICE. See PUBLIC HEALTH SERVICE, UNITED STATES.

UNITED STATES SHIPPING BOARD. See MERCHANT MARINE OF THE UNITED STATES.

UNIVERSALISTS. See CHURCHES IN THE UNITED STATES, STATISTICS OF THE.

UNIVERSITIES AND COLLEGES. See separate articles on the principal universities and colleges under their respective headings.

UPPER SENEGAL AND NIGER. See FRENCH WEST AFRICA.

UPPER SILESIA. See GERMANY; POLAND; SILESIA.

UPSALA COLLEGE, a Lutheran co-educational institution, founded in 1893 and located at Kenilworth, N. J. In 1922-23 it had a faculty of 12 members, 105 students, property valued at \$67,000 and an income of \$32,000. Rev. Carl G. Erickson, Ph.D., is president.

URSINUS COLLEGE, a co-educational institution, founded in 1869 and located at Collegeville, Pa. The college is affiliated with the Reformed Church in the United States, but is non-sectarian. In 1922-23 it had a faculty of 22 members, 261 students, property valued at \$545,900 and an income of \$193,246.16. George L. Omwake, Ph.D., is president.

URUGUAY, a Republic of South America, lying in the fork between the River Uruguay and the Atlantic Ocean. On the south is the

broad estuary of the Rio de la Plata into which the Uruguay empties. Across the river to the west are the Argentine provinces of Entre Rios and Corrientes and to the north is the Brazilian state of Rio Grande do Sul from which Uruguay is separated by the rivers Cuareim and Yaguron, Lake Merim and a line through the Santa Ana hills.

Area and Population.—Uruguay has an area of 72,153 square miles and a population of 1,494,953 on 31 Dec. 1920. The great majority of the people are of pure European descent. The last census showed 181,222 foreigners in the republic, of which number 64,000 were Italians, 55,000 Spanish, 28,000 Brazilians, 20,000 Argentines, 9,000 French, 1,400 British, 1,400 Swiss, 1,200 Germans and about 4,000 other nationalities.

Religion.—There is complete separation of Church and state and full liberty for all denominations. Roman Catholicism is the faith of the majority of the people. This church is governed by an archbishop at Montevideo, the capital, and two bishops—at Melo and Salto.

Education.—Elementary education is compulsory. There are 1,005 public elementary schools with 102,889 pupils; 195 private schools with 21,223 pupils and 6,060 students in secondary schools. There are also a number of evening schools which are attended by 6,000 adults. For higher education there is a university at the capital with over 5,000 students and 344 members of the faculty. There are several special schools throughout the republic.

Production and Industry.—Agriculture and kindred industries are the chief sources of the country's wealth and furnish employment to about 100,000 of the population. In 1921 wheat was planted on 758,762 acres and yielded 303,505 metric tons; barley was planted on 4,178 acres and yielded 1,589 tons; oats was planted on 76,730 acres and yielded 28,871 tons; and flax was planted on 94,250 acres and yielded 26,811 tons of linseed. Cattle-raising is a main industry; there are in the country 8,000,000 head of beef cattle, 11,472,852 sheep, 303,958 swine and 567,154 horses. Grapes, tobacco and olives are cultivated with success. The grape crop of 1920 amounted to 56,482,000 kilos of grapes and 7,919,000 gallons of wine were produced. Among the metals found are gold and silver, copper, lead and magnesium. Lignite coal is mined also. The generation of electricity for light, heat and power is now a state monopoly. The republic has 16,017 industrial and commercial establishments, capitalized at 134,383,782 pesos.

Commerce.—The foreign trade of the republic in 1920 amounted to \$128,916,632, of which \$80,751,718 represented the value of the exports. Exports for the year 1921 were slightly above this amount. In 1922 the exports of wheat amounted to 1,094 tons as compared with 560 tons in 1921; corn exports of 1922 totaled 1,690 tons as compared with 1,296 tons the year previous; linseed exported in 1922 amounted to 126 tons as compared with 3,708 tons the year before; flour exports totaled 672 tons in 1922 compared with 841 tons in 1921; in 1922 9,000 bales of sheep skins and 1,289

bales of wool were exported, as compared with 8,000 bales of skins and 6,000 bales of wool for 1921. For the first nine months of 1922 the export of mutton carcasses amounted to 275,407, as compared with 287,790 in the same period of 1921. Beef quarters exported totaled 711,570 in 1922 as compared with 821,579 in 1921. Exports in 1922 were valued at \$76,000,000 and imports at \$43,000,000. As a result of floods, caused by heavy rains in August, the grain crop of 1922 was greatly damaged, wheat being damaged the most. Much of the land was still under water at the end of October and the planting of the new crop was greatly delayed. The planters endeavored to make up part of their losses by planting late corn with the aid of fertilizers.

Shipping and Communications.—The merchant marine of the republic consists of 22 steam vessels of 42,114 tons and 254 coast vessels of 18,061 tons. In 1920 there cleared at Uruguayan ports 5,670 vessels (steam) of 8,380,302 tons and 3,954 vessels (sail) of 512,568 tons. There is considerable river transport. Uruguay has 2,240 miles of national roads and 3,100 miles of departmental roads. There are 1,572 miles of main railways mostly British owned. One line included above (78 miles) and three minor lines are state-owned. The total rail mileage is 1,625 miles to which must be added 170 miles of tramways. Telegraph lines have an aggregate length of 4,819 miles served by 258 offices. There are 995 post offices.

Finance.—The budget for the fiscal year 1922-23 as approved by the National Administrative Council and submitted for enactment to the Chamber of Deputies, totaled 41,868,474 pesos. The present revenues being calculated at 34,705,474 pesos, there would be a deficit of 7,163,000 pesos. In its message of transmittal the National Administrative Council recommended the following new taxes to cover the above deficit:

	Pesos
Tobacco, perfumery and toilet articles	400,000
Reform of customs tariff of duties	1,000,000
Ten per cent increase on existing duties	716,000
Luxury tax	2,000,000
Import duties on gasoline	400,000
Consular fees	200,000
Tax on foreign drafts	200,000
Additional tax on stock companies	200,000
Tax on horse racing	520,000
Total	6,336,000

On 1 Jan. 1921 the public debt of the republic was stated to be 172,202,766 dollars, of which 2,135,500 dollars was given as international \$126,598,574 as foreign and \$43,468,692 as internal.

Defense.—Uruguay has a small standing army and also a National Guard. The standing army is recruited by voluntary enlistment lasting from 2 to 5 years. It has a peace strength of 10,500 men and a war strength of about 50,000. Service in the National Guard is compulsory, beginning at the age of 17 and lasting to the 45th year. It is divided into three classes—the First Ban, consisting of youths from 17 to 30 years is a mobile force

more or less well organized and of a total strength of about 20,000 men; the Second Ban is made up of men aged from 30 to 45 years who are fit for service and is the provincial or departmental guard; the Third Ban, containing all men between 19 and 45 years, is the territorial army and is liable only for garrison duty in its own districts. The total strength of the entire Guard is about 100,000 men. The naval forces consist of the armored cruiser *Montevideo*, the *Uruguay* and the yacht *18 de Julio*.

Government.—The executive power is vested jointly in a President and the National Administrative Council. The President is elected for a term of four years by direct vote of the people and is ineligible for re-election for eight years following his last term of office. The National Administrative Council consists of nine members, six from the majority party and three from the largest minority party and three retiring every two years. The President controls the Departments of Foreign Affairs, War and Marine, the Interior, and appoints the Ministers of these departments. The Council controls the Departments of Finance, Public Works, Education and Industry, and appoints the Ministers or heads of these Departments. The legislative power is vested in a Parliament of two chambers, the Senate and Chamber of Representatives, which meet in regular session from 15 March to 15 December. In the interval there is a permanent committee of two senators and five deputies, which has charge of the legislative branch until the next following regular session. Senators are chosen by members of an Electoral College, the members of the latter being chosen by direct popular vote. There is one senator to each Department, of which there are 19. Members of the lower chamber are elected for three years and are 90 in number. Senators are elected for six years, one-third of the senate retiring every two years. There is universal male suffrage for adults 18 years and over who can read and write.

History.—José Serrato, leader of the Colorado party, elected President of Uruguay 26 Nov. 1922, succeeded President Brum, 1 March 1923, for the ensuing four years. He found the smallest republic in South America in a prosperous condition with a population of 1,500,000 bent on developing the country and extending relations with the outside world. While Uruguay has been largely pastoral and agricultural, the past few years have brought her a notable extension in foreign trade with large increase in exports and imports. The importation of fine breeding stock from 1920 to 1923 tended to improve greatly cattle ranches and stock farms. Exportation of wool and hides increased and over 6,000 vessels called at Uruguayan ports in 1922, augmenting the general foreign and domestic shipping business. Better class immigrants continued to arrive and to gravitate to the farm lands of the interior, swelling the population and increasing the prosperity of the country. Considerable attention was given, in 1922, to the improvement of the railway system of the republic and to the encouragement of foreign capital in new railway enterprises. The comparatively small extension of Uruguayan

territory has enabled the government to attack successfully the problem of illiteracy and the general improvement and extension of the educational system. Though Uruguay is considerably smaller than Paraguay, the income of the Uruguayan government was nine times that of Paraguay in 1922. This, with her less intractable land configuration, gave her a great advantage over her inland neighbor of which she took full advantage. This was reflected in the very large attendance, for a South American country, of students at her national free schools. The National University at Montevideo had over 5,000 students in 1922, which was considerably larger than that of the University of Mexico with some three times the population to draw from; and over ten times that of the National University of Paraguay. Public education made a long step to become effectively compulsory in Uruguay in 1922, with perfected educational machinery for continuing the fight for the total obliteration of illiteracy in the next few years. The educational department and the government did much effective work in behalf of social welfare in 1922. The legislature added to the excellent laws passed previously to this end and the University and the educational department put into movement more effective machinery for the eradication of numerous unfavorable conditions and evils existing among the working classes. The national budget for 1922 showed nearly \$40,000,000 income while the expenditure was considerably less. The fact that the exports, \$76,000,000 were very much larger than the imports, \$43,000,000, tended to the stability of the national currency. One feature of the development of Uruguayan foreign trade in 1922 was the remarkable decline in imports from and exports to the United States over those of 1920-21. The imports from the United States were, in round numbers, \$28,000,000 in 1920-21 as against less than \$9,000,000 in 1922, a decrease of 66 per cent. The decline in exports, while not so notable, was still heavy, dropping from \$17,500,000 in 1920-21 to \$11,000,000 in 1922. This was due to a variety of causes. Europe provided better shipping facilities, cheaper transocean rates, more experienced salesmen and more favorable credit terms. Another factor of importance was the return to the South American market of Great Britain, France, Belgium and Italy, with the former far in the lead.

UTAH, one of the mountain group of States of the far West, bounded north by Idaho and Wyoming, east by Colorado, south by Arizona and west by Nevada. Its area is 84,990 square miles and in 1920 it had a population of 449,396. It ranks 10th in order of size and 40th in order of population. The population of 1920 included 441,901 whites, 3,338 Asiatics, 2,711 Indians and 1,446 negroes. The foreign-born residents in the same year numbered 56,455 and included 14,836 English, 3,589 Germans, 6,073 Swedes, 3,029 Greeks and 1,207 Irish. Fifty-two per cent of the total population in 1920 was rural. The largest cities, with their populations in 1920, are Salt Lake City the capital, 118,110; Ogden, 32,804, and Provo, 10,303.

Religion.—The principal Christian denominations have a combined membership of 280,848. Of these about 75 per cent are members of the Church of Latter Day Saints, 10,000 are Roman Catholics, 2,254 Presbyterians, 1,848 Methodists, 1,616 Congregationalists, 1,469 Episcopalians and 1,305 Baptists.

Education.—Illiteracy is low in the State, being only 1.9 per cent. Among native whites it is three-tenths of one per cent. School attendance is compulsory for 20 weeks of the year and in large cities for 30 weeks for children between the ages of 8 and 16. There are 637 elementary schools in the State with 3,180 teachers and 83,276 children. There are 46 high schools with 642 teachers and 14,130 pupils. The Mormon Church maintains a church teachers' summer school. For higher education there are the University of Utah, the State School of Mines and the State School of Arts and Science, Utah Agricultural College, Brigham Young University, Brigham Young College, the Latter-Day Saints' University and seven academies.

Finances.—At the beginning of the fiscal year 1922 the State had on hand a balance of \$1,823,929.11. Receipts during the fiscal year amounted to \$10,298,381.22. Disbursements during the same period amounted to \$10,817,955.81, leaving a balance on hand at the beginning of the current fiscal year of \$1,304,354.52. Estimated receipts for the fiscal year 1923 amount to \$10,150,000. The bonded debt of the State at the end of 1922 was \$9,910,000; the floating debt, \$125,000, making a total indebtedness of \$10,035,000. The assessed value of real property was \$508,869,619, and of personal property, \$126,662,638.

Agriculture.—In 1920 there were in the State 25,662 farms, having a combined area of 5,050,410 acres, of which 1,715,380 acres was improved land. The total value of all farm property that year was \$311,274,728. The value of all crops in 1920 was \$57,890,000. The State produces all the cereals of the temperate zone. The wool clip of 1920 was 16,150,000 pounds. The chief crops, with their acreage, yield and value for the year 1922 were: Corn, 32,000 acres, 781,000 bushels, \$664,000; spring wheat, 135,000 acres, 3,456,000 bushels, \$3,110,000; winter wheat, 159,000 acres, 2,226,000 bushels, \$2,003,000; barley, 18,000 acres, 630,000 bushels, \$346,000; oats, 86,000 acres, 3,354,000 bushels, \$1,576,000; rye, 12,000 acres, 120,000 bushels, \$72,000; tame hay, 503,000 acres, 1,459,000 tons, \$11,964,000; potatoes, 21,000 acres, 4,137,000 bushels, \$1,655,000; apples, 1,085,000 bushels; peaches, 885,000 bushels, and pears, 98,000 bushels. On 1 Jan. 1923 there were in the State 128,000 horses, valued at \$8,832,000; 3,000 mules, valued at \$186,000; 90,000 milk cows, valued at \$5,670,000; 455,000 other cattle, valued at \$12,467,000; 2,340,000 sheep, valued at \$20,826,000, and 108,000 swine, valued at \$1,177,000.

Mining.—The mineral resources of the State are varied and include gold, silver, lead, manganese, gypsum, oil, coal, copper, salt, and zinc. The total value of the mineral output in 1920 was \$45,169,328. The coal mined in 1922

was 4,864,000 tons. The value of the gold, silver, copper, lead and zinc produced from mines in Utah in 1922 was \$39,738,000; in 1921 it was \$22,023,790. The production of all metals increased decidedly, though the value was not great compared with the average of the last 10 years. The outstanding features of the year were the abnormal increase in the production of silver, which makes a record for the State, and the resumption of copper mining on a large scale at Bingham. The mine production of gold increased from \$1,769,905 in 1921 to \$2,201,500 in 1922. The gold produced from copper ore was greatly increased, as the Utah Copper and Utah Consolidated properties were again active. The mine output of silver increased from 12,251,998 ounces in 1921 to 16,800,000 ounces in 1922. This marked increase of more than 4,500,000 ounces was generally distributed, but the gain was especially noticeable in the Park City and Tintic districts. The mine production of copper increased from 30,891,403 pounds in 1921 to 95,500,000 pounds in 1922, and the value from \$3,984,991 to \$12,797,000. The mine output of lead increased from 89,187,269 pounds in 1921 to 134,000,000 pounds in 1922, and the value increased from \$4,013,427 to \$7,638,000. The average price of lead was about 5.7 cents a pound. The mine output of recoverable zinc in 1922 was 5,290,000 pounds. Most of the zinc was produced from lead-zinc ore mined at the United States mine, at Bingham, and milled at Midvale. In 1922 the mines in Utah produced about 5,500,000 tons of ore, an increase from 2,137,522 tons in 1921. Of this total the Bingham district produced 4,773,800 tons, as compared with 1,538,309 tons in 1921. The estimated production of the district was 57,889 ounces of gold, 1,349,500 ounces of silver, 91,298,000 pounds of copper, 37,000,000 pounds of lead, and more than 4,000,000 pounds of zinc.

Manufactures.—The chief manufactures are the smelting and refining of lead and copper, and the manufacture of sugar from sugar beets. Salt Lake City and Ogden are the chief manufacturing centres. In 1920 there were 1,159 industrial establishments, capitalized at \$143,666,000 and turned out products valued at \$156,804,000.

Communications.—The steam railroad mileage of the State is 2,161 miles and 448 miles of electric railroads.

Government.—The State executive is a Governor, elected for four years, who receives a salary of \$5,000. The legislature consists of a Senate and a House of Representatives, but the initiative and referendum features of the constitution restrict the power of the legislature. The Senate has 20 members, elected for four years and the House has 55 members, elected for two years. For local administration the State is divided into 28 counties.

Officials.—Governor, Chas. R. Mabey; Secretary of State, H. E. Crockett; Attorney-General, H. H. Cluff; Auditor, Mark Tuttle; Treasurer, Wm. D. Sutton, and Superintendent of Education, D. C. Jensen.

Judiciary.—Members of Supreme Court: Albert J. Weber, Valentine Gideon, Samuel R. Thurman, J. E. Frick and J. W. Cherry.

UTAH AGRICULTURAL COLLEGE, a State co-educational institution, founded in 1888 and located at Logan, Utah. The college is a part of the public school system. It was opened to students in 1890; in 1901 the curriculum was considerably enlarged and an extra year's work required for entrance to the collegiate courses leading to a degree. In 1903 the college organization was made more complete and effective by the establishment of five schools—the school of agriculture, the school of domestic science and arts, the school of agricultural engineering and mechanic arts, the school of commerce and the school of general science; in 1904 a department of music was added, offering courses in vocal music, piano-forte, violin and theory of music. The State Experiment Station is connected with the college and offers opportunity for advanced work. The institution is organized on the quarter system, being thereby in practically continuous session. In 1922-23 it had a faculty of 90 members, 1,111 students enrolled up to 18 January, property valued at \$1,510,000 and an estimated income of \$313,000. Elmer G. Peterson, Ph.D., is president.

UTAH, University of, a State co-educational institution, founded in 1850 and located at Salt Lake City, Utah. It was incorporated as the University of the State of Deseret in 1850 and opened to students the same year. But, as it failed to secure patronage or adequate financial support, it was closed after one session until 1867. The governing board of regents, however, maintained their organization during this time and had general supervision over the public schools system. From 1867 to 1869 it was largely a commercial college, but in the latter year was reorganized with normal and classical departments. In 1894 a new charter was obtained, the name changed to the University of Utah and a 60-acre tract of land on the Douglas Reservation was granted to the university by the Federal government. In the same year the Salt Lake Literary and Scientific Association gave \$60,000 for the endowment of a chair of theology. In 1899 the Legislature provided for the erection of new buildings and the removal of the University to the new site, which was

first occupied in 1900. Subsequent to this the government granted the university land so that its campus was enlarged to 90 acres. The board of regents consists of the president of the university and the Secretary of State, ex-officio members, and 12 members appointed by the Governor for four years. The organization includes the school of arts and sciences, the school of education, school of mines and engineering, school of medicine, school of law, school of commerce and finance, the extension division, and in connection with the school of education the university high school, elementary training school and kindergarten. The schools of arts and sciences, education, commerce and finance offer courses leading to the degree of B.A. and B.S. The graduate division offers courses leading to the degree of M.A. and M.S. Other degrees conferred include those of B.S. in pharmacy and LL.D. in law. In 1922-23 it had a faculty of 156 members, an estimated student enrollment of 2,650, property valued at \$1,371,110 not including value of 92 acres of campus, which was the gift of the Federal government, and an income of \$514,000. George Thomas, Ph.D., is president.

UTLEY, George Burwell, American librarian: b. Hartford, Conn., 3 Dec. 1876. He was educated at Colgate University and at Brown University, receiving the degree of Ph.B. from the latter in 1899. From 1899-1901 he was assistant librarian of the Watkinson Library of Hartford, Conn.; from 1901-05 librarian of the Maryland Diocesan Library of Baltimore and from 1905-11 librarian of the Jacksonville (Fla.) Public Library. Mr. Utley served as secretary and executive officer of the American Library Association and its publicity board from 1911 to 1920. On 22 April 1920 he became librarian of the Newberry Library of Chicago. In 1917-9 he was executive secretary of the Library War Service of the American Library Association, which supplied reading matter to the military and naval forces during the war and the demobilization period. Mr. Utley is the author of: 'The Life and Times of Thomas John Claggett' (1913), also papers on libraries and library work in various professional journals.

V

VACCINATION. In *Health News*, issued by the United States Public Health Service, in 1922 it was stated that "Before the days of vaccination conservative estimates show that one-third of all persons had smallpox and one-tenth of all deaths were due to it. To-day smallpox is rare; many physicians have never seen a case; and, where vaccination is consistently practiced no deaths from it occur. Formerly smallpox was considered a children's disease; and it still is a child's disease—where infantile and school vaccination is neglected. Witness the Philippines, where four or five years ago, after years of neglect of vaccination, an epidemic swept away nearly 50,000 persons, a large percentage of whom were children under 10 years of age. In the United States, well-vaccinated communities show low smallpox rates—Maryland with one-tenth case per thousand population; New York with one-fortieth per thousand, and the District of Columbia with 0.14 per thousand. Poorly-vaccinated States tell another story: Oregon with 1.45; Washington with 1.72; and Kansas with 2.0 per thousand population. Some communities wait till an epidemic breaks out and then rush to vaccinate. These stop the disease—after it has caused many deaths and has "branded" many survivors. Sixteen months ago, in Kansas City, an epidemic of smallpox began, yielding 350 cases and 123 deaths; and a few months later another started in Denver and yielded 950 cases and 288 deaths. Such epidemics always end the opposition to vaccinations in the community—for a time."

Of especial interest was the decision on 13 Nov. 1922 of the Supreme Court of the United States affirming that city health officials have authority under the police power of the States to require school children to be vaccinated and in so doing are not acting in contravention of the "due process" or the "equal protection" clauses of the Fourteenth Amendment. The decision was in the case of *Zucht v. King et al.*, of San Antonio, Texas.

Ordinances in that city provide that no child or other person shall attend a public school or other place of education without having first presented a certificate of vaccination. Public officials had excluded the plaintiff from a public school because she did not have the required certificate and had refused to submit to vaccination. They also caused her to be excluded from a private school.

The plaintiff claimed that the ordinances violate the Fourteenth Amendment, since they deprived her of liberty without due process of law, and that as administered they denied equal protection of the laws. The case came to the Supreme Court on a writ of error.

VALLEY OF TEN THOUSAND SMOKES. See GEOGRAPHIC SOCIETY, NATIONAL.

VALPARAISO UNIVERSITY, a non-sectarian co-educational institution, founded in 1873 and located at Valparaiso, Ind. In 1922-23

it had a faculty of 55 members. No figures as to property value, number of students and income supplied in response to request. Dr. Horace M. Evans is president.

VANADIUM. See METALLURGY.

VANDERBILT UNIVERSITY, a non-sectarian, co-educational institution, chartered in 1872, opened in 1875 and located at Nashville, Tenn. In 1922-23 it had a faculty of 150 members, 1,250 students, property valued at \$13,000,000 and an income of \$500,000. James H. Kirkland, LL.D., is president.

VAN DEVENTER, Sir Louis Jacob, South African soldier: b. Orange Free State, South Africa, 1874; d. Johannesburg, 27 Aug. 1922. He was of Boer lineage and acquired English comparatively late in life. Even when he assumed chief command in East Africa he had great difficulty in expressing himself fluently in that campaign. He spent his early life in his native state and took part in the Anglo-Boer War becoming second in command to Gen. Jan Smuts in 1899-1902. After Vereeniging, he loyally accepted the new order of affairs. When the World War broke out he was colonel in the permanent staff of the South African Defence Force. At the end of 1915 when General Botha, then Prime Minister of the Union, decided to raise a South African Force for service in East Africa, Brigadier-General Van Deventer was selected to command a division; and when General Smuts was given the chief command a still more important position was assigned to Van Deventer. In March 1916, his skilful turning movement ousted the Germans from Taveta and contributed greatly to the success of the Kilimanjaro fighting. In January 1917, when General Smuts went to London to join the War Cabinet, Van Deventer accompanied him; but he returned in May 1917 to East Africa as commander-in-chief and held this position until the end of the war. Shortly after the surrender of General von Lettow, Van Deventer resigned his command December 1918, and returned to South Africa. He was considered one of the most brilliant soldiers South Africa has ever produced. In 1917 England made him Companion of the Bath and Knight Commander of the Bath.

VAN FLEET, Walter, American horticulturist: b. Piermont, N. Y., 18 June 1857; d. Miami, Fla., 26 Jan. 1922. He was educated in public and private schools and in 1880 was graduated from Hahnemann Medical College, Philadelphia, with the degree of M.D. He practiced medicine in central Pennsylvania, 1880-92 and was horticultural editor of the *Rural New Yorker*, 1890-1910; vice-president, Rural Publishing Company, 1902-10. In the latter year he became expert plant breeder and physiologist of the Bureau of Plant Industry, United States Department of Agriculture, which position he still held at the time of his death. In 1910-11, he was in charge of the United States Plant Introduction Garden, Chico, Calif., and only a few

days before his death went to Miami to conduct experiments at the Plant Introduction Garden in that city. Most of his time, after 1872, was devoted to plant breeding, and he had come to be recognized as one of the leading plant breeders of the country, especially because of his work in the development of gladioli, garden roses, and chestnuts. He published 'Bird Portraits' (1888); 'The Gladiolus' (with M. Crawford, 1911); (brochures) 'Vegetable Breeding' (1907); 'Breeding Hardy Roses' (1907); 'Hybridizing Gladiolus Species' (1909); 'Cultivation of American Ginseng'; 'Goldenseal under Cultivation'; 'The Cultivation of Peppermint and Spearmint' (bulletins, Department of Agriculture, 1913, 1914, 1915). In 1918, he was awarded the George Robert White medal of honor for eminent services in horticulture by the Massachusetts Horticultural Society. He was a member of the American Association for the Advancement of Science and of the American Genetic Association. See HORTICULTURE.

VAN NAME, Addison, American librarian: b. Chenango, N. Y., 15 Nov. 1835; d. New Haven, Conn., 29 Sept. 1922. He was graduated from Yale in 1858 as validictorian, and studied in German universities until 1862 when he became a tutor at Yale. He also taught Hebrew in the theological seminary. In 1865 he was appointed librarian and held that post until 1904, when he became librarian emeritus. Professor Van Name was the last of the faculty scholars of the pre-Civil War period. He was noted for his knowledge of languages and he wrote extensively on Oriental subjects.

VAN WYCK, Augustus, American lawyer and politician: b. New York City, 14 Oct. 1850; d. there, 8 June 1922. He was a son of William Van Wyck, a well-known lawyer and for many years a member of the Board of Aldermen of the old city of New York. A brother, Robert Anderson Van Wyck, who died in Paris, France, 14 Nov. 1918, was the first Mayor of Greater New York, having been elected to that office in 1897. Augustus Van Wyck received his preliminary education at Phillips-Exeter Academy, Exeter, N. H., was graduated from the University of North Carolina with the degree of A.B. in 1864 and later received the degree of A.M. from the same institution. He practised law in Richmond, Va., for a time but in 1871 moved to Brooklyn, N. Y., and shortly thereafter began to take an active interest in politics, allying himself with the regular Democratic organization in Brooklyn. He was a member of the State Democratic Committee of New York for many years, was a delegate to numerous Democratic national, city and district conventions, and in 1882 was president of the Kings County General Committee. From 1884-96 he was judge of the Superior City Court of Brooklyn and from 1896-98 was justice of the Supreme Court of New York. In the fall of 1898 he was the Democratic candidate for Governor of New York against the late Col. Theodore Roosevelt, the Republican nominee. Colonel Roosevelt was elected and thereafter Mr. Van Wyck returned to the practice of law, manifesting during the remainder of his life but little interest in politics. With his brother, Robert A. Van Wyck, he was one of the founders of the Holland Society of

New York and was its president in 1892 and in 1919-20. He was grand master of the Zeta Psi Fraternity of North America in 1882; president of the New York Association of Zeta Psi, 1913; member of the Long Island Historical and various other societies and social clubs.

VASSAR COLLEGE, a non-sectarian educational institution for women, founded 18 Jan. 1861 and located at Poughkeepsie, N. Y. In 1922-23 it had a faculty of 151 members, 1,148 students, property valued at \$8,885,373.22 and an income of \$1,079,445.69. Henry Noble MacCracken, Ph.D., LL.D., L.H.D., is president.

VAUGHAN, Bernard, English Jesuit priest: b. Courtfield, Hertfordshire, England, 20 Aug. 1847; d. Roehampton, 31 Oct. 1922. He was the 12th of 14 children of Col. J. F. Vaughan. Seven of the sons became priests and all the five daughters nuns. Educated at Stonyhurst, he entered the novitiate of the Society of Jesus in 1868 and was ordained priest in 1876. He spent 18 years in Manchester, where his work as philanthropist, scholar, lecturer and preacher attracted great attention. In 1901 he went to London, in charge of the Jesuit Church in Farm Street, Westminster; and here he became the companion and friend of the children of the streets and organized clubs, concerts, bazaars and many other entertainments for their benefit. Here, too, he became conspicuous for his attacks on "the Smart Set" and talked freely on all the questions and evils of the age. He also helped the poor Roman Catholics in the East End, hired a cheap lodging there and went to it one day a week. He also addressed open air audiences. His sermons on the "Sins of Society" in 1906 drew large audiences; also his Lenten course 'The Sins of Society Gauged by the Passion of Christ,' (1907); and 'Why Believe in Christ and Christianity?' (1907). In 1910 he was cathedral preacher at the Eucharistic Congress, Montreal; in 1911 he lectured in the United States and Canada and crossed the Pacific to speak before Waseda and Imperial universities at Tokio. He also addressed the House of Peers and society ladies before he left for a lecture tour in China. He lectured in Italy and France and again in the United States in 1912; and in New York gave a series of sermons against Socialism. In 1914 he preached in Dublin a Lenten course on 'Jesus Christ as Guest and Host,' and in 1916 received a letter from Pope Benedict XV, congratulating him on his religious jubilee and granting him privilege of portable altar. Father Vaughan was a great friend of King Edward VII, who frequently congratulated him on his sermons. His publications are: 'The Roman Claims'; 'Faith and Reason'; 'The Triple Alliance'; 'The Demon of Drink in the Temple of God'; 'Her Golden Reign'; 'The Sins of Society' (1906); 'Society, Sin and the Savior' (1907); 'Life Lessons from Joan of Arc, the Matchless Maid'; 'Socialism' (1910); 'The Our Father, Our Country's Need To-Day' (1911); 'Socialism from the Christian Standpoint' (1913); 'What of To-Day?' (1914); 'The Menace of the Empty Cradle' (1917); and 'The Worker's Right to Live' (1918). Father Vaughan was a striking looking man, above the average height, with massive, well-shaped head. As compared with his

famous brother, Cardinal Vaughan, there was more boldness and less delicacy in his mien. The contrast in looks between the two brothers was no less striking than their contrast of temperaments. Father Vaughan was very devout. An English critic writes: "Few men of any sort in England had an equal power over large audiences in his day. He played on them as an instrument with conscious mastery; could find his way surely to their humor; call them to tears; move them to indignation; or fill them with pity or enthusiasm."

VEDDER, Elihu, American painter and modeler: b. New York, 26 Feb. 1836; d. Rome, Italy, 29 Jan. 1923. He received his general education at the Brinkerhoff School, Brooklyn, N. Y.; studied painting with Mattison, at Sherburne, N. Y., and (1856) with Picot, in Paris. He worked in Italy for five years (1857-61) and then returned to the United States. He found that on account of a defective arm, he was disqualified to serve as a soldier (Civil War), so in 1865 he returned to Paris and remained there until 1867. He then went to Rome, where he established his permanent studio, but he made frequent trips to the United States. His work reflects two prominent characteristics; idealism, and a vivid imagination. One of his most famous accomplishments was his illustration of Edward Fitzgerald's 'Omar Khayyam,' in 1884. Among other well known and typical works are: The mosaic 'Minerva' and five decorative panels, New Congressional Library, Washington, D. C.; a large panel executed for Bowdoin College, Me.; a decorative ceiling for the Huntington house, New York City; and the oil paintings, 'The Greek Actor's Daughter,' 'Venetians on the Main,' 'The Crucifixion,' etc. He was a member of the Society of American Artists; Academician, National Academy of Design (from 1865); member of the Century Association of New York; Academician, American Institute of Arts and Letters; member, American Society of Mural Decorators. He was awarded the gold medal at the Columbian Exhibition, Chicago. His versatility is evidenced by the fact that he was author also of the following works: 'The Digressions of V.' (1910) and 'Miscellaneous Moods in Verse' (1914).

VEGETABLES. See HORTICULTURE.

VENEERS. Statistics compiled by the Federal Bureau of Census, acting in co-operation with the United States Forest Service, show that the total quantity of wood used in the manufacture of veneers in the United States during 1921, was 400,388,000 feet, a decrease of 30.6 per cent compared with the quantity consumed in 1919, and 8.2 per cent compared with the quantity consumed in 1909. Red gum continued as the leading species in the industry and the quantity of this wood used in 1921 was 146,740,000 feet, as against 198,641,000 feet used in 1919, and 129,930,000 feet used in 1909. Among the other more important native woods used were yellow pine, birch, cottonwood, tupelo and yellow poplar, while mahogany and Spanish cedar were the leading imported woods used. Of the total quantity used in 1921, 87 per cent was cut by the rotary method, 7.6 per cent was sliced, and 5.4

per cent was sawed. The number of establishments engaged in the industry in 1921 was 353, compared with 362 in 1919, and 637 in 1909.

VENEREAL DISEASES. See PUBLIC HEALTH SERVICE, UNITED STATES.

VENEZUELA, a Republic of South America, officially known as Los Estados Unidos de Venezuela (the United States of Venezuela), situated on the north coast of the continent and bounded on the land side by British Guiana on the east and Colombia and Brazil on the south and Colombia on the west. The area of the republic is about 398,594 square miles with a population of 2,411,952 on 1 Jan. 1921. This area is divided into a federal district, 20 states and two territories. The Federal capital is Caracas, with a population of 92,212. Other cities are Maracaibo (46,706); Valencia (29,466); Barquisimeto (23,943); San Cristobal (21,385); Ciudad Bolivar (19,712); Cumana (16,342); Caro (15,533); Maturin (15,465); San Felipe (15,506); and Merida (14,082).

Religion.—The Roman Catholic is the state religion. This church has one archbishop and five bishops. There exists full toleration for all denominations.

Education.—Primary education is free and in a measure compulsory. The state prescribes the courses of study in all schools, both public and private. For higher education there is a university at Merida, the University de Los Andes. Higher instruction is divided into schools or faculties.—philosophy, natural sciences, medical science, political science, ecclesiastical science, etc. These schools may exist separately or unite to form universities. At the University of Los Andes there are at present eight schools or faculties. In the capital there are schools of medical science, and ecclesiastical science, besides private schools of political science. There are also a number of special schools, music, art and trade, commerce, etc. The total expenditure on education in 1921-22 was 4,425,587 bolivars, of which 2,493,538 bolivars went for elementary education.

Production and Industry.—Agriculture is a staple source of the wealth of the republic, but does not represent all of its natural riches, as the country abounds in minerals. Agriculturally, the republic is divided naturally into three zones—the purely agricultural, the pastoral and the forest zones. Coffee, cocoa, cane sugar, Indian corn, cotton and beans are the chief crops cultivated. Coffee is the chief of all crops, about 200,000 acres being devoted to it. There are 33,000 coffee plantations, 11,000 sugar plantations and 5,000 cocoa plantations. The pastoral zone affords good runs for cattle and other live stock. The live stock of the country is estimated as follows: 2,077,684 head of cattle, 2,154,716 goats, 512,086 swine, 113,439 sheep, 167,708 horses, 200,439 asses, and 54,565 mules. The forest zone produces the typical products of the tropics, such as caoutchouc, balata, a gum closely resembling rubber, copaiba, tonka beans, vanilla, etc. Cattle-raising is retarded by the great droughts incident to the dry season. One of the most potential and promising fields of development in Venezuela especially for foreign capital, is the petroleum industry. Both British and American oil interests have secured concessions on large tracts of prospective oil lands, principally in the

Maracaibo district, but calculations as to the possible production made from geological observations are yet to be proved. The production for 1921 was 1,433,000 barrels. The law concerning hydrocarbons was promulgated 30 June 1920, and states clearly the rights and privileges of foreigners in the development of this resource of Venezuela. One of the principal mineral products is gold. In 1920 about 835,000 grammes of gold were produced. Copper is produced to the extent of about 25,000 tons annually. Coal is worked to a similar extent. Salt mines are worked by the government in several states and asphalt from Lake Bermudez was exported to the United States of North America to the extent of 23,452 tons in 1920. Pearl fishing is an important industry in the coastal inlets. Manufacturing industries are still in their infancy, nearly all manufactured articles being imported. There are four cotton mills in the republic which produce a coarse cheap cloth. Fibre sacks, cement and glass about complete the list of articles made in the country. Matches and salt are monopolies of the government.

Communications.—The total mileage of roads in Venezuela is 1,636. There are few good main roads but the capital is now connected with the nearby cities with good roads. Apart from river transport the inland traffic is still mainly by means of pack animals and mule cart. The republic has a total of 644 miles of public railways. The chief line is that from Caracas to Valencia (113 miles). Other main lines are: Caracas-Guaira (22 miles); the Venezuela Central (45 miles); Puerto Cabello-Valencia (34 miles); the Bolivar Railway (143 miles); the Great Tachira (74 miles); and the La Ceita Railway (52 miles).

Finance.—The revenues of the Venezuelan government increased from 67,414,974 bolivars for the fiscal year 1913-14 to 81,560,716 bolivars for the fiscal year 1920-21. Expenditures increased from 72,276,987 bolivars in 1913-14 to 102,655,743 bolivars in 1920-21. For the fiscal year 1921-22 the budget estimate of revenues was 63,234,000 bolivars, with estimated expenditures of the same amount. Similarly it was estimated in the budget for the year 1922-23 that revenues and expenditures would balance at 61,706,000 bolivars. The Venezuelan debt decreased from 171,624,375 bolivars in 1914 to 124,790,291 bolivars in 1921. Of the total indebtedness in 1914, 110,992,451 bolivars represented external obligations and 60,631,834 bolivars, internal obligations. In 1921, the external debt was 78,210,186 bolivars and the internal debt 46,580,105 bolivars.

Commerce.—Imports for the year 1920 were valued at 298,943,659 bolivars (19 cents at normal exchange). Imports for the first six months of 1921 were valued at 49,397,419 bolivars. Imports from the United States to Venezuela in the first half of 1921 were valued at 26,696,237 bolivars. The chief articles imported in 1920 were: cotton, linen and woolen cloth, automobiles, cotton blankets, alcoholic liquors, canvas, cement, drugs and medicines, wheat flour, iron manufactures, machinery, cotton hose, paper, toilet preparations, thread, stearine, toys, rice, rubber, and vegetable oils. The following table, furnished by the United States Department of Commerce, shows the exports from the

republic, exclusive of parcel post shipments, during 1920 and for the first half of 1921

EXPORTS FROM VENEZUELA.

ARTICLES	1920		1921 First six months	
	Metric tons	Bolivars	Metric tons	Bolivars
Asphalt.....	21,922	890,214	21,893	874,988
Balata.....	1,413	8,651,448	538	2,814,749
Beans.....	196	83,940	66	31,805
Bones.....	275	11,054		
By-products, fish.....	52	110,890	23	48,577
Cacao.....	17,598	34,879,198	12,567	11,113,080
Chicle.....	132	656,378	50	141,010
Cigarettes.....	8	77,065	2	14,272
Coal.....	5,189	103,185	842	17,040
Coconuts.....	1,221	441,036	350	97,830
Coffee.....	33,443	65,794,020	27,958	31,741,742
Copra.....	73	44,467	30	12,280
Cotton.....	476	843,209	163	224,542
Dividivi.....	4,294	641,149	1,515	195,477
Drugs and medicines.....	10	45,380	3	9,645
Fertilizer.....	21,873	359,609	783	27,185
Flour.....	412	101,453	31	8,369
Fruit.....	58	19,685	42	10,095
Gasoline.....	292	229,885	56	55,712
Gold.....	*981	2,448,120	*1,339	4,254,772
Hides and skins.....	3,089	12,863,734	665	1,343,850
Horns.....	135	29,765	22	6,163
Kerosene.....	145	100,490	67	60,229
Lard.....	9	25,681	1	2,634
Live stock.....	10,959	5,040,191	4,125	1,768,192
Magnesite.....	2,000	40,000		
Maize.....	1,310	1,022,627	2,262	829,755
Meat, frozen.....	5,613	2,704,888		
Petroleum, crude.....	40,669	2,050,486	71,271	3,673,086
Plants.....	388	327,427	79	101,588
Printed matter.....	56	268,961	18	73,554
Rubber.....	153	363,706	23	87,612
Sandals of hemp.....	126	580,859	22	172,545
Seeds.....	973	433,270	62	9,609
Shells.....	1,077	142,288	294	37,325
Sole leather.....	108	610,494	92	253,323
Sugar, including brown sugar.....	18,806	14,107,016	7,516	3,178,002
Tobacco, leaf.....	130	241,910	175	311,638
Tonka beans.....	277	1,506,794	10	66,942
Vegetable oils:				
Coconut.....	14	20,192	3	4,355
Cottonseed.....	6	17,506	*426	1,210
Wood and manufactures.....	9,877	1,976,708	6,799	1,325,558
All other articles.....		9,737,779		2,043,083
Total.....		170,906,378		67,048,414

* Kilos.

Of these exports the United States took goods to the value of 19,642,014 in 1920 and to the value of 11,351,924 bolivars in the first half of 1921.

Defense.—All citizens must serve two years with the active army. The army personnel consists of about 18,000 officers and men. The navy consists of a cruiser, three gunboats, a transport, tug, torpedo boat and several coast patrol boats. The personnel of the navy consists of one battalion distributed among the vessels of the fleet.

Government.—The executive power is vested in a President, elected for seven years by the Congress. He exercises his executive functions through responsible ministers. The legislative power is vested in a bicameral Congress—the Senate and the Chamber of Deputies. The Senate has 40 members, elected for three years and two from each state. The members of the chamber are chosen by direct suffrage for three

years in the proportion of one to every 35,000 inhabitants, and one more for an excess of 15,000. A state with less than 35,000 inhabitants is allowed one deputy. The states are autonomous and politically equal, each with a legislative assembly, chosen according to their several constitutions. At the head of each state is a president and a general secretary. The federal district and the two territories are administered by the President of the Republic, who appoints the governors thereof. At the beginning of 1922 the President of the Republic was General Juan Vicente Gomez, whose term expired during the year. A Provisional President, Dr. V. Marquez Bustillos was chosen ad interim on 19 April 1914, and, the President-elect failing to take office and retaining his post of Commander-in-Chief of the Army, continued to act as head of the Republic until 26 June 1922 when General Gomez assumed the Presidency.

History.—The history of Venezuela during 1922 is a record of attempts at reconstruction, of progressive development and of efforts on the part of the government to encourage the investment of foreign capital in the country. The year opened with the putting into force of the decree of the previous December, liberating political prisoners not confined for crimes which the law of the land could not condone. This created a better social feeling and gave added strength to the administration. The boundaries between Colombia and Venezuela, long in dispute, were finally settled by a commission meeting in Switzerland; which rendered a decision satisfactory, on the whole, to both countries.

During the year the International Red Cross Association met in Caracas while the government showed special activity in sending deputies to international congresses and other assemblies of a scientific and cultural nature, especially to those of Latin America. Notwithstanding the many and varied activities of the government, both at home and in foreign lands, and the fact that the interest was promptly paid on the foreign debt, the national expenditures were kept well within the previously arranged budget, raised almost altogether by internal taxation and customs duties. Much attention was given to the sanitation of the capital and the port towns in accordance with plans which promise ultimately to make Venezuela one of the most healthful of Latin-American republics. Considerable money was spent on much needed public works. The national army, which had been of a more or less nondescript character, was reorganized on a more efficient basis. The inefficient were weeded out and the military body reduced to 18,000 well-equipped and trained men with experienced officers.

Anticipatory steps had been taken to meet the world-wide crisis following the World War, with the result that the national currency, which had declined in value, continued to recover until it reached par. So Venezuela felt the pressure of the abnormal conditions less than most of the Latin-American nations, due to the encouragement given commerce and trade and foreign capital. Notwithstanding the unfavorable balance of trade in most of the Latin-American countries bordering on the Gulf of Mexico,

Venezuela showed an excess of 30 per cent of exports over imports. This was one of the primary causes of the re-establishment of the stability of exchange and of the maintenance at par of the national currency. The liberal attitude of the government toward foreign capital brought into the country during 1922, for the development of the national resources immense sums, over \$100,000,000 of which was invested in the oil fields and in the construction of works pertaining thereto. This capital was principally of American, English and Dutch origin. The development of Venezuelan oil fields is of capital interest to the exploitation of her other numerous natural resources and the more rapid development of her national life. Explorations made in the Venezuelan oil fields tend to show that the vast oil region of Texas and the Gulf Coast of Mexico, stretching across the Gulf, extends down the coast of Colombia and Venezuela, so that the most notable event of the year, for the latter country, was the sudden attention which petroleum magnates gave to her oil fields. It means that the income of the government promises to be greatly increased in the near future; and that the nation will then be able to build new and improve old ports and construct or rebuild highways and furnish other means of communication imperatively needed. It means also that there will be sufficient funds for the building of schools, colleges and universities.

The two most important purely political events of the year were the assumption of the presidency by Juan Vicente Gomez (26 June 1922) and the re-establishment of the Central University of Venezuela, which was placed in a position to extend the benefits of popular education to a much larger percentage of the Venezuelan people than under any previous regime.

JOHN HUBERT CORNYN.

VERMONT, a New England State, bounded north by Canada, east by New Hampshire, south by Massachusetts and west by New York. For over 100 miles its western boundary line is marked by Lake Champlain. The area of the State is 9,564 square miles and in 1920 it had a population of 352,428. It is 42d in order of size and 45th in order of population. Of the population in 1920, 351,817 were whites, 572 negroes, 24 Indians and 15 Asiatics. The foreign-born population numbered 44,526, and included 14,181 French Canadians, 10,687 English Canadians, 2,884 Irish, 2,197 English and 1,854 natives of Scotland. The chief cities, with their populations in 1920, are: Burlington, 22,779; Rutland, 14,954; Barre, 10,008; Montpelier, the capital, 7,125; Saint Johnsbury, 8,705; Bennington, 9,982; Saint Albans, 7,588 and Springfield, 5,283.

Religion.—The principal Christian denominations have a combined membership of 145,682, of whom 78,178 are Roman Catholics, 22,912 Congregationalists, 16,808 Methodists, 9,797 Baptists, 6,000 Episcopalians and 1,157 Presbyterians.

Education.—In the school year ending June 1922 there were in the primary schools of the State, 2,990 teachers and 63,539 pupils. School attendance is compulsory for children between the ages of six and 16. For higher education there are in the State the University of Ver-

mont, Middlebury College and Norwich University.

Finances.—On 1 July 1921 the balance on hand in the State treasury was \$2,022,932.10. Receipts during the following fiscal year amounted to \$5,090,430.08. Disbursements for the same period totaled \$5,776,852.26, leaving a balance on hand 1 July 1922 amounting to \$1,336,509.92. The bonded debt of Vermont in 1922 was \$2,111,531.90. The assessed value of real property the same year was \$193,887,873.73; of personal property, \$66,856,300.83.

Agriculture.—Agricultural production covers a wide range. Dairy products form one of the leading industries and the State is first in the production of maple sugar. There are in the State 29,075 farms, having a total area of 4,663,577 acres, of which 1,691,595 acres is improved land. The value of all farm property in 1920 was \$222,736,620. The value of all farm crops the same year was \$47,999,600. The value of dairy products the same year was \$31,573,340. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 82,000 acres, 3,444,000 bushels, \$3,134,000; spring wheat, 9,000 acres, 189,000 bushels, \$274,000; barley, 10,000 acres, 290,000 bushels, \$281,000; oats, 87,000 acres, 3,132,000 bushels, \$1,754,000; buckwheat, 4,000 acres, 96,000 bushels, \$88,000; tame hay, 909,000 acres, 1,273,000 tons, \$22,278,000; potatoes, 25,000 acres, 3,000,000 bushels, \$2,790,000; apples, 960,000 bushels, and pears, 10,000 bushels. On 1 Jan. 1923 there were in the State 76,000 horses, valued at \$7,904,000; 385,000 milk cows, valued at \$21,560,000; other cattle, 82,000, valued at \$1,542,000; 43,000 sheep, valued at \$301,000, and 59,000 swine, valued at \$826,000.

Mining and Other Products.—The chief mineral wealth of the State is its granite and marble quarries, the output of which was valued at over \$5,000,000 in 1920. Other mineral products are asbestos and talc.

Manufactures.—The State has 1,790 manufacturing establishments, employing 33,500 and capitalized at \$134,314,000. The cost of materials at the time of the last manufacturing census was \$95,173,000, and the value of the products, \$168,108,000. The chief industries are cotton goods, foundry and machine shop products, lumber and timber products, marble and stone work, paper and pulp, and machine tools.

Communications.—The State has a steam railroad mileage of 1,076 and 103 miles of electric railways. There is also considerable water borne traffic over the lakes, rivers and canals.

Legal Holidays.—1 January; 22 February; 30 May; 4 July; 16 August; the first Monday in September (Labor Day); 12 October; 11 November; 25 December, and a day appointed or set apart by the Governor or by the President of the United States as a day of thanksgiving.

Charities and Corrections.—Industrial school, 242 boys and girls; State Hospital for Insane, 791; Brattleboro Retreat for Insane, 481; State School for Feeble-Minded, 162; State's Prison for Men, 327, and State's Prison for Women, 30.

Recent Legislation.—In 1919 legislation was enacted by means of which the appointment of district health officers was authorized. In the same year provision was made for the writing

of a history of Vermont's part in the World War, and at the same session acts were passed giving women the right to vote. In 1921 Armistice Day was made a legal holiday. Winooski was incorporated as a city. Restrictions on office-holding by women were removed. A uniform law of sales was enacted and teachers' training schools were established.

Recent Political History.—In 1920 James Hartness was elected Governor. Warren G. Harding carried Vermont in the Presidential election by a plurality of 47,283 over James M. Cox. In 1922 Redfield Proctor was elected Governor. Frank L. Green was elected United States Senator and succeeded Carroll S. Page. Frederick G. Fleetwood was elected Representative in Congress from the first district to succeed Frank L. Green, and Porter H. Dale was elected Representative in Congress from the second district to succeed himself.

Government.—The State executive is a Governor, who is elected for two years and receives a salary of \$3,000. The State legislature is composed of a Senate of 30 members and a House of Representatives of 246. Vermont sends two Senators and two Representatives to the Federal Congress. The State is divided into 14 counties for purposes of local administration.

Officials.—(1922) Governor, James Hartness; Lieutenant-Governor, Abram W. Foote; Secretary of State, Harry A. Black; Attorney-General, Frank C. Archibald; Auditor, Benjamin Gates; Treasurer, Walter F. Scott, and Commissioner of Education, Clarence H. Dempsey. The officials in 1923 are: Governor, Redfield Proctor; Lieutenant-Governor, Frank S. Billings; Secretary of State, Harry A. Black; Attorney-General, Frank C. Archibald; Auditor, Benjamin Gates; Treasurer, Thomas H. Cave, and Superintendent of Education, Clarence H. Dempsey.

Judiciary.—Members of Supreme Court: John H. Watson, Chief Justice; George M. Powers, William H. Taylor, Willard W. Miles, and Leighton P. Slack, associate justices.

VERMONT, University of, a State co-educational institution, founded in 1791 and located at Burlington, Vt. In 1922-23 it had a faculty of 150 members, a student enrollment of 1,137 regular session, exclusive of 650 in summer session, property estimated at \$5,000,000 and an income of \$410,000. Guy W. Bailey, LL.D., is president.

VETERANS' BUREAU, United States. The original Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department was approved 2 Sept. 1914, creating an insurance of American vessels and their cargoes against risks of war. This was intended as a temporary measure.

By the Act of 12 June 1917, provisions were made for the insurance of masters, officers and crews of those vessels against loss of life, or personal injury by risks of war and detention following capture.

For the carrying out of this Act, the Division of Marine and Seamen's Insurance was established. Payment of indemnities was based on a definite schedule and in ratio to the amount of insurance carried. Loss of life or disability from injury had to result within 90 days di-

rectly and exclusively from the date of injury.

The Government had the right to examine the master, officer, or member of the crew who made any claim under the policy. Such cases were referred to the Chief Medical Advisor, who in turn referred them to the officers of the United States Public Health Service wherever possible. The Commissioner of Marine and Seamen's Insurance was advised as to the medical findings in the case.

The Division of Military and Naval Insurance, in charge of a Commissioner (Assistant Director) was created within the amendatory Act of 6 Oct. 1917, which Act, with its amendments constituted the basic law under which the insurance and compensation benefits to veterans of the World War were determined. This Act, with its amendments, provided in part that "for death or disability resulting from personal injury suffered or disease contracted in the line of duty on or after 6 April 1917, or for aggravation of disability existing prior to examination, acceptance and enrollment for service, when such aggravation was suffered and contracted in the line of duty on or after 6 April 1917, by any commissioned officer or enlisted man, or by any member of the Army Nurse Corps (female) or of the Navy Nurse Corps (female) when employed in the active service under the War Department or Navy Department, the United States shall pay to such commissioned officer or enlisted man, member of the Army Nurse Corps (female) or of the Navy Nurse Corps (female) or in the discretion of the Director separately to his or her dependents, compensation as hereinafter provided; but no compensation shall be paid if the injury, disease, or aggravation has been caused by his own wilful misconduct." The important amendment of 1 Aug. 1921, establishing a Veterans' Bureau, further provided that an ex-service man who is shown to have an active pulmonary tuberculosis or neuro-psychiatric disease (of more than 10 per centum degree of disability) developing within two years after separation from active military or naval service of the United States should be considered to have acquired his disability in such service, or to have suffered an aggravation of a pre-existing pulmonary tuberculosis or neuro-psychiatric disease in such service. In addition to the compensation, the Act provided that an injured person should be furnished by the United States such reasonable governmental medical, surgical and hospital services, and with such prosthetic and orthopedic supplies and appliances as the director might determine to be useful and reasonably necessary, provided the disability was of service origin. Permanent ratings of disability are based as far as is practicable upon the average impairments of earning capacity resulting from such injuries in civil occupations and not upon the impairment in earning capacity in each individual case, so that there can be no reduction in the rating of compensation for individual success in overcoming the handicap of a permanent injury. Temporary ratings are based on the impairment in earning capacity in each individual case.

Distinct from the Bureau of War Risk In-

surance there was established on 27 June 1918, a Federal Board for Vocational Education, which provided in part for vocational rehabilitation and return to civil employment of disabled persons discharged from military and naval forces of the United States.

On 9 Aug. 1921, there was approved the Act establishing a Veterans' Bureau. By this Act, functions, powers and duties conferred by previously existing law on the Bureau of War Risk Insurance were transferred to and made a part of the Veterans' Bureau. The functions, powers and duties conferred upon the Federal Board of Vocational Education were transferred to and made a part of the Veterans' Bureau. Furthermore, all personnel facilities, property and equipment of the Bureau of War Risk Insurance, of the U. S. Public Health Service (so far as it related to the medical care and treatment of beneficiaries of the then Bureau of War Risk Insurance) and of the Rehabilitation Division of the Federal Board of Vocational Education were transferred and made a part of the Veterans' Bureau.

Under the present organization of the Veterans' Bureau there is a Central Office at Washington, D. C., and 14 district offices. These district offices, with the State areas over which they have jurisdiction, are as follows: (1) Boston.—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island; (2) New York.—New York, New Jersey, Connecticut; (3) Philadelphia.—Pennsylvania and Delaware; (4) Washington, D. C.—Virginia, West Virginia, Maryland, District of Columbia; (5) Atlanta.—North Carolina, South Carolina, Tennessee, Georgia, Florida; (6) New Orleans.—Alabama, Mississippi, Louisiana; (7) Cincinnati.—Indiana, Ohio, Kentucky; (8) Chicago.—Illinois, Michigan Wisconsin; (9) St. Louis.—Missouri, Nebraska, Iowa, Kansas; (10) Minneapolis.—Minnesota, North Dakota, South Dakota, Montana; (11) Denver.—Colorado, Wyoming, Utah, New Mexico; (12) San Francisco.—California, Arizona, Nevada; (13) Seattle.—Washington, Oregon, Idaho; (14) Dallas.—Texas, Oklahoma, Arkansas.

Each district area is further sub-divided into sub-district offices of which there is a total of 126 within the United States, and in addition a sub-district office at Honolulu, Hawaii, and Manila, Philippine Islands.

Prior to 1 May 1922, medical facilities available to beneficiaries of the Veterans' Bureau were largely under the direction of the U. S. Public Health Service, but upon that date all hospital facilities of the Public Health Service, devoted specifically to the hospitalization of Veterans' Bureau beneficiaries, were transferred by Executive Order to the control and jurisdiction of the Director of the Veterans' Bureau. There is at the present time established at each district office and to a lesser extent at sub-district offices adequate and complete dispensary equipment for the examination and out-patient treatment of the Bureau beneficiaries. In addition to this, there was as of 10 Aug. 1922, a total of 17,635 hospital beds available under the jurisdiction of the Veterans' Bureau. In addition to this, there were available hospital beds under the jurisdiction of the following other govern-

mental agencies: U. S. Public Health Service (Marine Hospitals), 781; U. S. Army, 3,083; U. S. Navy, 1,623; National Homes for Volunteer Disabled Soldiers, 3,256; Interior Department (St. Elizabeth's Hospital, Washington, D. C.), 870.

In these governmental facilities there was being hospitalized as of 10 Aug. 1922, a total of 17,936 patients classified as follows: Tuberculosis, 7,916. Neuro-Psychiatric diseases, 4,775; General medical and surgical conditions, 5,245. In addition to these patients there was being hospitalized as of that date a total of 8,054 patients in civil institutions, classified as follows: Tuberculosis, 2,716; Neuro-Psychiatric, 4,120; General medical and surgical, 1,218. There was a total of 25,990 patients of the Veterans' Bureau being hospitalized as of 10 Aug. 1922. For the fiscal year, 1 July 1921, to 30 June 1922, there was admitted to all hospitals a total of 134,829 beneficiaries of the Veterans' Bureau. Prior to 1 July 1921, there had been reported a total of 146,219 admissions to all hospitals. As an indication as to the amount of out-patient treatments and examinations furnished by the Veterans' Bureau, there was given during the month of July, 1922, a total of 116,680 physical examinations, and there was furnished as of that same period a total of 140,249 out-patient treatments.

To 1 Aug. 1922, there had been filed a total of 846,560 claims for compensation, 171,033 of which were death claims and the balance of 675,527 were disability claims. Of this number of 675,527 disability claims, there was a total of 174,364 receiving compensation, the balance of claims having been either disallowed, discontinued, or were pending adjudication. To 1 July 1922, there had been registered a total of 633,199 claims for rehabilitation, of which number there were 103,108 men and women in training. The balance of claims had either been declared ineligible, non-feasible because of physical condition, discontinued, not yet assigned or in the process of induction, or the men had been rehabilitated. To 1 July 1922, there had been reported rehabilitated a total of 16,966 trainees.

As of August 1922, there was a total of 570,570 insurance policies in force, classified as follows: Term Insurance, 286,963; U. S. Government Life, 283,607.

Insurance claims on which payments were being made totaled 142,675, representing a monthly disbursement in benefits of approximately \$8,500,000.

The total disbursements made by the Veterans' Bureau to 1 August 1922, totaled \$1,840,272,922.16, of which amount \$345,473,596.92 had been disbursed for insurance; \$369,619,864.40 for compensation; \$138,961,332.15 for medical and hospital services; \$583,510,275.62 for allotment and allowances; Marine and Seamen's Insurance, \$35,093,773.30; Hospital facilities and service, \$998,080.00; and administrative, \$52,196,538.91.

The appropriation for the fiscal year ending 30 June 1923, totaled \$418,063,844.95 for all purposes, although the annual expenditures will exceed this figure, the difference made available

from balances of continuous appropriations and special funds.

In addition to the hospital facilities now available to the U. S. Veterans' Bureau, additional facilities are being made available through the appropriations provided for by the First and Second Langley Bills. Certain of these facilities provided for out of these funds are included in the figures presented above. The First Langley Bill provided a total of 6,169 hospital beds, classified as follows: Tuberculosis, 3,005; Neuro-Psychiatric, 2,914; General, 250. This appropriation totaled \$18,600,000. The Second Langley Bill provides for a total of approximately 3,680 beds, classified as follows: Tuberculosis, 1,100; Neuro-Psychiatric, 2,380; General, 200. The amount of this appropriation is \$17,000,000. With the increase in governmental hospital facilities it is anticipated that there will be a material reduction in the utilization of civil hospital facilities, as well as a withdrawal from existing governmental institutions of temporary construction. See also PENSIONS.

CHARLES R. FORBES,

Former Director, Veterans' Bureau.

VETERANS OF FOREIGN WARS OF THE UNITED STATES,

a national organization composed of ex-service men who served in the Army, Navy or Marine Corps of the United States during wars and campaigns conducted by the United States on foreign soil or in foreign waters. It had its beginnings in Columbus, Denver, Pittsburgh, Altoona and Philadelphia. At Columbus, on 23 Sept. 1899, the American Veterans of Foreign Service was organized. On 10 October following, this order was chartered by the State of Ohio. The society kept up its activities until 1905 when it was amalgamated with a society of the same name which was formed in Pennsylvania several years before. On 12 Dec. 1899, there was formed in Denver, the Colorado Society, Army of the Philippines, with Gen. Irving Hale as sponsor. The following year the society became national. Stewart Post No. 1, still flourishing, is the oldest post of the Veterans of Foreign Wars. Early in 1901 a group of foreign service men in Altoona, Pa., formed a society, while on 13 Oct. 1901 another group formed a similar society in Pittsburgh. The latter was called the Society of Philippine War Veterans but later the name was changed to Foreign Service Veterans. In the summer of 1902 there was formed in Philadelphia the Society of American Veterans of the Philippine, Cuban and China Wars. The following year the three Pennsylvania groups met at Altoona and formed a united society which took the name of American Veterans of Foreign Service and, in 1905, amalgamated with the Ohio society of the same name. The Army of the Philippines and the American Veterans of Foreign Service met at Denver in 1913 and, amalgamating, formed the Veterans of Foreign Wars of the United States. The objects of the society are "to preserve and strengthen comradeship among its members; to foster true patriotism and maintain true allegiance to the United States of America; to assist disabled and needy veterans of all wars through the maintenance of service bureaus and relief committees, and to take care of and assist

the widows and orphans of deceased ex-service men, and to educate posterity in the principles of true Americanism through publications and work in public schools and institutions." The organization's revenue is derived from the annual dues of the members and from donations and is used to carry out the purposes outlined above. The organization in 1922 had 1,000 posts with a total of approximately 100,000 members. The organization has its national headquarters at 32 Union Square, New York City. The officers for 1922-23 are: Commander-in-Chief, Tillinghast L. Huston; Adjutant-General, Reuel W. Elton; Quartermaster-General, Walter I. Joyce.

VETERINARY MEDICINE AND SURGERY. Education.—During 1922 the attendance in the veterinary schools of America increased slightly. The courses of study have been strengthened and more attention has been given to short courses for graduate veterinarians. In most veterinary colleges more stress has been placed upon training veterinary students in the feeding, breeding, and handling of livestock. In order to better meet the needs for veterinary training along these lines the Ontario Veterinary College has been moved to Guelph, Ontario, where it is affiliated with the Ontario Agricultural College.

State Veterinary Medicine.—In addition to the Bureau of Animal Industry of the United States Department of Agriculture and the various State veterinary departments for the control of transmissible animal diseases, there is noted a tendency to employ county and district veterinarians, generally in connection with organizations of farmers or stockmen, to assist in the suppression of transmissible animal diseases and to advise farmers and stockmen in hygiene, sanitation and feeding, that their flocks and herds may be kept free from disease.

Army Veterinary Service.—During 1922 the number of veterinary officers in the United States Army was reduced to 126, as required by Congress. To meet the requirements of the Army in case of national emergency, active efforts have been made to secure veterinary reserve officers that are commissioned and assigned to army units.

Organizations.—The American Veterinary Medical Association, representing the veterinarians of America, has steadily increased in size and influence. Plans are being put into effect to provide for closer co-operation between the State associations and the National association. There has been a notable increase in local veterinary associations for the consideration of local problems.

Medicine.—During the past year carbon tetrachloride has been introduced in veterinary practice for the destruction of certain intestinal round worms of animals as recommended by Dr. Maurice Hall. Carbon tetrachloride has been proved to be the most efficient vermicide for hook worms in animals. As a result of tests upon animals, carbon tetrachloride is being used very successfully in the treatment of hook worm infestation in man as it is more effective, safer, more economical, convenient, and causes less discomfort to the patient.

Transmissible Animal Diseases.—So far as

known, no animal plagues have been introduced from abroad, although foot-and-mouth disease has caused serious losses of livestock in England and on the Continent. This disease has broken out in Jamaica also. Rigorous quarantine measures have been established by the Bureau of Animal Industry against animals or material that might carry the infection of this disease.

Tuberculosis.—Progress is being made in the control of bovine tuberculosis, particularly by the accredited herd plan, the number of herds of pure bred cattle on the accredited list being steadily increased. During the past year efforts were made to eradicate bovine tuberculosis from definite areas, such as a county, but at the present time the value of this plan cannot be definitely estimated. In testing cattle for tuberculosis the subcutaneous, intra-dermal, and ophthalmic methods are used, singly and combined.

Swine Tuberculosis.—Tuberculosis in swine appears to be increasing to such an extent that it is a serious problem in certain localities. Swine probably contract the disease from the excreta of infected cattle, or from infected dairy byproducts, such as skimmed milk or whey that has not been properly pasteurized.

Avian Tuberculosis.—Tuberculosis among chickens has increased, or its presence has been recognized particularly among farm flocks in the North Central States. The disease is diagnosed by the intradermal tuberculin test applied to the comb or wattles. The only satisfactory method of combating avian tuberculosis is destruction of infected birds and thorough disinfection of the premises.

Abortion Disease.—Ranking next in economic importance to bovine tuberculosis is abortion disease of cows. The disease also prevails to a limited extent in sows and mares. No satisfactory method of dealing with the disease has been found, except by quarantine, disinfection and proper hygiene and diet. While some results have been obtained from the use of a living vaccine, the risks of spreading the disease, except when very carefully handled, are considerable.

Anthrax.—Sporadic outbreaks of anthrax have occurred, particularly in the Southern States. These have been controlled by vaccination, disinfection and quarantine. Authorities believe that before a spore vaccine is used to control an outbreak of suspected anthrax, a definite diagnosis should be made both bacteriologically and by inoculation, to prevent the possible introduction of anthrax into a locality by the spore vaccine.

Texas Fever.—The losses of cattle from Texas or tick fever have been of relatively little importance. The work of eradicating the cattle tick by dipping infested cattle in a solution of arsenic is progressing steadily. Most of the Southern States are now free from cattle ticks, except the southern half of Florida and the southeastern part of Texas. It is expected that within a few years the United States will be entirely free from cattle ticks.

Rabies.—During the year 1922 a large number of animals, particularly dogs, were vaccinated against rabies according to the Japanese method of Dr. S. Kondo. This method is re-

ported to give the vaccinated animal immunity for one year. At present a definite statement as to the true value of this method of immunization cannot be made, as more time is necessary to determine its efficiency.

Hog Cholera.—The ravages of this disease continue in spite of the proved efficiency of hog anti-cholera serum, and its general use in the principal swine growing regions of the United States. It is thought that the rather indiscriminate use of hog cholera virus by incompetent persons is one of the most important means of spreading the disease, and various State authorities are taking measures to reduce the danger by proper police regulations.

Forage Poisoning.—The losses of livestock by forage poisoning were relatively small during the past year. It has been definitely proved that poisoning of livestock by the *bacillus botulinus* is not as frequent as was formerly thought. The greatest losses of livestock occur on the Western ranges from eating poisonous plants, but losses also occur from feeding decomposing mouldy foods.

Parasitic Diseases.—While sheep scab, cattle and horse mange exist to a limited extent in some of the Central and Western States, careful inspection and dipping of infected stock by State and Federal veterinary inspectors has prevented any serious outbreaks of these diseases. Stomach worms in sheep are very common but the disease is controlled by giving a solution of copper sulphate orally. Experiments are being carried out to determine how long pastures remain infected. Now that the life history of this common parasite is known, practical field measures have been devised so that premises can be freed from these parasites.

Meat and Food Inspection.—The veterinary inspection of meat, milk, cheese, butter, and other foods of animal origin, is being efficiently carried out by the United States Bureau of Animal Industry for interstate trade. Veterinary inspection of animal food products for intra-state and municipal trade is increasing. Public abattoirs, stables, and establishments where animal foods are prepared, are becoming more sanitary and the foods of better quality.

Research.—Investigation of the causes of various animal diseases are being carried on by scientific workers in the various State experiment stations, by the United States Department of Agriculture, the Health of Animals Department of the Canadian Government and various endowed and private research laboratories. Among the most important animal diseases being studied are tuberculosis, abortion disease, hog cholera and related diseases, swamp fever of horses and parasitic diseases. No outstanding discoveries with reference to animal diseases were announced in 1922.

NELSON S. MAYO.

VICTORIA. See AUSTRALIA.

VICTORY LOAN. See under UNITED STATES, TREASURY OF THE UNITED STATES.

VIGNAUD (Jean) Henry. American diplomat; b. New Orleans, La., 27 Nov. 1830; d. Paris, France, 19 Sept. 1922. He came of an old Creole family, taught in public schools in New Orleans in 1852-56 and wrote for *Le*

Courier and other New Orleans papers. In 1857-60 he was editor of *L'Union de Lafourche*, Thibodeaux, La., and in 1860-61 of a weekly review, *La Renaissance Louisianaise*. During the Civil War he served as Captain of the Sixth Louisiana Regiment in the Confederate Army, and, as secretary of the Confederate Diplomatic Commission, was sent to Paris in 1863. In 1869 he was secretary of the Roumanian Legation in Paris; in 1872 was connected with the Alabama Claims Commission at Geneva; in 1873 was United States delegate, International Diplomatic Metric Conference; and was second secretary, American Legation and Embassy at Paris from 1875-82 and first secretary from 1882 to 1909. In that year he became honorary chancellor. On several occasions in succeeding years he acted as *chargé d'affaires*. During this long diplomatic service in Paris 27 ministers and ambassadors came and went while Henry Vignaud was a permanent figure. He trained the novices and had made so many friends among the French statesmen that he possessed an enormous influence. When he resigned in 1909 he was the oldest man in the American diplomatic service in Europe. As he was without private means, a number of Americans, including three former ambassadors, Levi P. Morton, Whitelaw Reid, T. J. Coolidge and Henry White, raised a modest fund to provide for his remaining days. Mr. Vignaud was president of the Société des Americanistes in Paris. He was a man of scholarly attainments and great polish of manner. He specialized on the life and voyages of Christopher Columbus; but his theory that Columbus's ambition to discover a new route to India was mythical has not been accepted by many authorities on this subject. His publications are: 'La Lettre et la Carte de Toscanelli sur la Route des Indes' (1901); 'Toscanelli and Columbus—The Letter and Chart of Toscanelli on the Route to the Indies by Way of the West' (1902); 'Letters to Sir Clements R. Markham and C. Raymond Beazley' (1903); 'The Real Birth Date of Columbus, 1451' (1903); 'La Maison d'Albe et les archives Colombiennes' (1904); 'Etudes critiques sur la Vie de Colomb' (1905); 'Histoire critique de la grande entreprise de 1492' (2 vols., 1911); 'Amerigo Vespucci' (1911); and 'Les expéditions des Scandinaves en Amérique, (1911).

VILLANOVA. Augustinian College of, a Roman Catholic educational institution for men, founded in 1843 and located at Villanova, Pa. In 1922-23 it had a faculty of 41 members, 736 students (including those in the extension school), and property valued at \$1,500,000. Income figures not given. Francis A. Driscoll, O.S.A., is president.

VILLIERS, Frederic, English artist and war correspondent; b. London, 23 April 1852; d. there 5 April 1922. He received his early education in France, and later studied at South Kensington and the Royal Academy, England. A war artist for *The Graphic* in Serbia, 1876, he was with the Russian army in Turkey, 1877-78; witnessed the Alexandrian bombardment, 1882; and was afterwards in Abyssinia, Bulgaria, Serbia and Burma. He made a lecture tour in the United States in 1887. In 1894 he was with

the Japanese army, as special artist and correspondent; in 1897 (Græco-Turkish War) he was representative for the *London Standard*; in 1898 he was with Kitchener in the Sudan; in 1899 (Boer War) he served as correspondent in South Africa for the *Illustrated London News*. During the Græco-Turkish War he used the cinematograph camera for the first time during the history of campaigning. He also introduced the use of the bicycle for the first time in any European campaign. Following the outbreak of the Russo-Japanese War, he left for the Far East early in 1904, and was with the Japanese army, the only war artist present, at the siege of Port Arthur. In 1909 he accompanied the Spanish army that operated in Morocco; in 1911 he joined the Italian army invading Tripoli; 1912-13 he was with the Bulgarian army during the Balkan War, being present at the siege of Adrianople. During the World War he spent two and one-half years with the British and French armies. He later left France and visited other fronts; lectured in Australia, Ceylon, South Africa and India; saw fighting on Mohmund territory; and continued his lecture tour through the Federated Malay States, the Straits Settlements, Japan, China, Canada and the United States. He was an exhibitor of war pictures at the Royal Academy and the Institute of Painters in Oil Colors, Piccadilly. During his remarkable career he was the recipient of 12 English and foreign war medals and decorations of various kinds. He was author of the following works: 'Pictures of Many Wars' (illustrated by himself, 1902); 'Port Arthur' (with original sketches, 1905); 'Peaceful Personalities and Warriors Bold' (illustrated by himself, 1907); 'Villiers: His Five Decades of Adventure' (1921). One of the most striking of all his paintings is a 20-foot canvas, representing a battle siege, and entitled 'Sap and Shell.'

VIRGINIA, one of the 13 original States, popularly known as the Old Dominion, bounded north by West Virginia and Maryland, east by Maryland and the Atlantic Ocean, south by North Carolina and west by West Virginia and Kentucky. The area of Virginia is 42,627 square miles and in 1920 it had a population of 2,309,187. It is 33d in order of size and 20th in order of population. In 1920 the population included 1,617,908 whites, 690,017 negroes, 824 Indians and 437 Asiatics. The foreign-born residents of the State the same year numbered 30,785, of whom 5,421 were Russians, 3,752 English, 2,802 Germans, 1,732 Irish, and 1,327 Scotch. The rural population in 1920 was 70.8 per cent of the total. The chief cities, with their populations in 1920, are: Richmond, the capital, 171,667; Norfolk, 115,777; Portsmouth, 54,387; Roanoke, 50,842; Newport News, 35,596; Petersburg, 31,002; Lynchburg, 29,956; Danville, 21,539; Alexandria, 18,060; Staunton, 10,623; Charlottesville, 10,688; Suffolk, 9,123; Hampden, 6,138; Fredericksburg, 5,882; Clifton Forge, 6,164; Bristol, 6,729; Covington, 5,623; Harrisonburg, 5,875; South Norfolk, 7,724; Winchester, 6,883, and Pulaski, 5,282.

Religion.—The principal Christian denominations have an aggregate membership of 949,136, of whom 456,095 are Baptists, 147,954 are Methodists, 49,186 Presbyterians, 36,671 Roman

Catholics, 33,593 Episcopalians, 14,610 Lutherans; 2,440 members of the Reformed Church, and 360 Congregationalists.

Education.—Primary education is free and for illiterates compulsory between the ages of 8 and 12. Children under 12 may not be employed in any mining or manufacturing work. Separate schools are provided for white and colored children. There are 14,904 public school teachers and 524,856 pupils in the primary schools. There are 673 high schools with 1,809 teachers and 29,157 pupils, and seven normal schools with 167 professors and 4,288 students. The State appropriation for education in 1920 was \$3,784,028.17. Within the State there are several institutions of higher learning, the chief of which are the University of Virginia, William and Mary College, Washington and Lee University, Virginia Polytechnic Institute, Virginia Military Institute, Hampden-Sidney College, and Virginia Union University for colored students. In addition, there are in the State three law schools, three medical schools, two schools of dentistry, two schools of pharmacy, two schools of theology and many commercial schools and schools for industrial and manual training.

Finances.—At the beginning of the last fiscal year the balance on hand amounted to \$2,052,427.69. Receipts during the fiscal year amounted to \$24,149,136.55. Disbursements during the same period amounted to \$23,702,124.14, leaving a balance on hand at the beginning of the current fiscal year of \$2,499,440.10. Receipts for the current fiscal year are estimated at \$22,298,046.38, while appropriated and assigned expenditures for the same period amount to \$22,381,402.16. At the end of 1922 the bonded debt of the State amounted to \$21,658,607.45. The assessed value of real property in 1922 was \$986,143,697. The assessed value of personal property: tangible, \$146,276,631; intangible, \$334,402,326; money, \$69,937,084; shares of bank stock, \$86,404,583.06 and public service corporations, real estate and personal, \$204,447,669.

Agriculture.—Virginia is basically an agricultural State. Much of its manufactures are based on the products of the soil. The census of 1920 reported 186,242 farms in the State with an aggregate area of 18,561,112 acres, of which 9,460,492 acres was improved land. In the same year the value of all farm property was \$1,196,555,772. In 1920 the value of all crops was \$292,824,260. The State ranked third in tobacco production, the yield for 1920 being 102,391,226 pounds. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 1,904,000 acres, 53,312,000 bushels, \$42,116,000; winter wheat, 830,000 acres, 10,375,000 bushels, \$12,658,000; barley, 9,000 acres, 248,000 bushels, \$198,000; oats, 166,000 acres, 3,320,000 bushels, \$1,959,000; buckwheat, 17,000 acres, 332,000 bushels, \$272,000; rye, 40,000 acres, 460,000 bushels, \$414,000; tame hay, 976,000 acres, 1,220,000 tons, \$19,520,000; sorghum sirup, 13,000 acres, 1,222,000 gallons, \$1,039,000; potatoes, 155,000 acres, 16,585,000 bushels, \$10,780,000; sweet potatoes, 46,000 acres, 6,210,000 bushels, \$5,403,000; cotton, 53,000 acres, 25,000 bales, \$2,875,000; tobacco, 209,000 acres, 156,750,000 pounds, \$37,620,000; peanuts, 130,000 acres, 78,000,000 pounds, \$4,290,000; apples, 8,360,000

bushels; peaches, 764,000 bushels, and pears, 270,000 bushels. The State produces all the cereals, vegetables and fruits of the temperate zone. It is one of the great peanut producing States. In recent years livestock raising has been greatly extended and the quality of the stock improved through the introduction of pure bred herds. On 1 Jan. 1923 there were in the State 300,000 horses, valued at \$24,600,000; 97,000 mules, valued at \$9,991,000; 430,000 milk cows, valued at \$18,275,000; 469,000 other cattle, valued at \$12,804,000; 338,000 sheep, valued at \$2,569,000, and 792,000 swine, valued at \$8,316,000.

Minerals.—Virginia has considerable mineral resources, the chief of which is coal. The output of coal in 1922 was 11,100,000 tons. Iron ore the same year was produced to the extent of 74,021 tons. Other minerals worked are copper, lead and zinc, salt, granite and other building stone, lime, and clay products.

Manufactures.—The State has considerable manufactures. The value of the products of all industries in 1920 was \$702,803,083. The manufacture of tobacco and cigars is the most important. The value of the output in 1920 was \$117,391,621. Abattoirs and meat packing is also a leading industry, with products in 1920 valued at \$41,319,836. The cotton mills of the State consume much more cotton than the State produces. The products of Virginia cotton mills in 1920 were valued at \$39,734,430. Smelting of iron and machine manufactures in 1920 were valued at \$50,533,822. Other large industries are ship building, paper making, flour milling, trunks, bags, glass, canning of fruits and vegetables, leather, coke, saw mill machinery, woodenware, clothing, silk and knit goods, and agricultural implements.

Communications.—The State is divided by the great Chesapeake Bay. Many rivers which flow into the bay are navigable, such as the James, the York, the Rappahannock and the Potomac. In Hampton Roads the Federal government maintains a great navy yard, and there are extensive ship building yards at Newport News. Norfolk is the largest port of the State and has extensive shipping interests, both coastal and foreign. It is one of the chief centres of the manufacture and distribution of fertilizers. The steam railroad mileage is 4,693 miles and electric railroad mileage is 440 miles. Telegraph and telephone lines total 12,090 miles of line.

Legal Holidays.—1 January; 19 January (Lee-Jackson Day); 22 February; 30 May (Confederate Memorial Day); 3 June (Jefferson Davis Day); 4 July; Labor Day; November, Tuesday next following first Monday (General Election Day); 11 November (Armistice Day); November, Thursday designated by President as Thanksgiving Day; 25 December.

Charities and Corrections.—The principal State institutions, with their location and number of inmates in 1922, are: Penitentiary, Richmond, 464; State Farm, Lassiter Post Office, 235; State Convict Lime Plant No. 1, Staunton, 41; State Convict Lime Plant No. 2, Irvington, 39; State Convict Road Force, 1,440; Central State Hospital, Petersburg, 1,746; Eastern State Hospital, Williamsburg, 1,073; Southwestern State Hospital, Marion, 851; Western State Hospital, Staunton, 1,285; Virginia State Epileptic Colony, Madison Heights, 576; Blue Ridge Sanatorium,

Charlottesville, 124; Catawba Sanatorium, Catawba, 304, and Piedmont Sanatorium, Burkeville, 89.

Legislation.—At the 1922 session of the legislature measures were enacted relating to child welfare. The State Highway Department was reorganized and a State Purchasing Committee created. A commission was also instituted to submit a plan of administrative reorganization. The question of calling a constitutional convention was submitted to the electorate. A Board of Censorship for motion pictures was created and county school administration was effectively reorganized.

Government.—The State executive is a Governor, elected for a term of four years, who receives a salary of \$5,000. The legislature, officially called the General Assembly, consists of two chambers, a Senate and a House of Delegates. The Senate contains not over 40 nor under 33 members, and the House of Delegates not over 100 nor less than 90 members. Senators are elected for four years and members of the House of Delegates for two years. Qualified electors, with the usual exceptions, are all citizens of 21 and over, residents of the State for two years and for 30 days in the county, town or precinct in which the election is held, who have paid the State poll taxes and registered. Virginia sends two Senators and 10 Representatives to the Federal Congress. The legislature meets biennially on the second Wednesday of January in even years.

State Officials.—Governor, E. Lee Trinkle; Lieutenant-Governor, J. E. West; Secretary of State, B. O. James; Attorney-General, John R. Saunders; Auditor, C. Lee Moore; Treasurer, Chas. A. Johnston, and Superintendent of Education, Harris Hart.

Judiciary.—Members of Supreme Court: Judge Joseph L. Kelly, President; Judge Frederick W. Sims, Judge Robert R. Prentiss; Judge Martin P. Burks, and Judge Jesse F. West.

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE. See VIRGINIA POLYTECHNIC INSTITUTE.

VIRGINIA MILITARY INSTITUTE, a State educational institution for men, founded in 1839 and located at Lexington, Va. In 1922-23 it had a faculty of 45 members, 610 cadets, property valued at \$1,000,000 and an income of \$225,500. Edward W. Nichols is superintendent.

VIRGINIA POLYTECHNIC INSTITUTE, a State co-educational institution, founded in 1872 and located at Blackburg, Va. In 1922-23 it had a faculty of 134 members, 1,485 students, property valued at \$1,250,000 and an income of \$611,188. Julian A. Burruss, Ph.D., is president.

VIRGINIA THEOLOGICAL SEMINARY AND COLLEGE, a Baptist co-educational institution for colored students, founded in 1888 and located at Lynchburg, Va. In 1922-23 it had a faculty of 30 members, 560 students, property valued at \$350,000 and an income of \$85,000. Robert C. Woods, D.D., is president.

VIRGINIA UNION UNIVERSITY, a Baptist educational institution for colored men.

founded in 1899 (although the schools from which it grew were founded in 1865), and located at Richmond, Va. In 1922-23 it had a faculty of 20 members, 400 students, property valued at \$500,000 and an income of \$80,000. William J. Clark, B.D., is president.

VIRGINIA, University of, a State institution of higher learning for men, (co-educational however in graduate and professional departments) founded in 1819 and located at Charlottesville, Va. In 1922-23 it had a faculty of 124 members, 1,722 students, property valued at \$2,550,000 exclusive of investments in bonds and other endowment securities, and an income of \$1,000,000. Edwin Anderson Alderman, LL.D., is president.

VIRGIN ISLANDS OF THE UNITED STATES, formerly the Danish West Indies. This island group consists of three islands, Saint Thomas, Saint Croix and Saint John, with about 50 smaller islands, mostly uninhabited. The islands lie about 60 miles east of Porto Rico. The language in general use is English. The islands were bought for \$25,000,000 from Denmark on 25 Jan. 1917. The area of the group is 132 square miles and the population at the census of 1917 was 26,051. The capital is Charlotte Amalie on the island of Saint Thomas, population 7,747. The islands are administered by the Navy Department under an act of Congress of 3 March 1917. The Governor is appointed by the President of the United States. He is assisted by six heads of departments, health, education, judiciary, public works, police and fire, and supplies. The legislative function is vested in a Colonial Council, in each of the two municipalities—Saint Thomas and Saint John, and Saint Croix. About two-thirds of the members of each council are elected by popular vote and the remaining one-third appointed by the Governor. Members of the council serve for four years. The Danish legal code remains in force until Congress shall provide otherwise. Agriculture and cattle raising are the chief industries. Bay rum is one of the chief exports. Education is compulsory. In the public schools there are 68 teachers and 2,108 pupils. Some junior high schools have been established in the three towns, and night schools also. The revenues, mostly derived from customs, income tax, building tax, etc., amounted to 1,409,868 francs in 1921. The deficit in the government operation is made up by appropriations by the Congress of the United States. Danish currency is still legal. Commerce of the United States with the Virgin Islands in 1921-22 was: Exports, \$754,729; imports, \$1,836,567. The Governor in 1922 was Captain Sumner E. W. Kittelle. U. S. N. The Government Secretary was Lieutenant C. C. Timmons, U. S. N.

VIRUS SERUM CONTROL. See ANIMAL INDUSTRY, UNITED STATES BUREAU OF.

VITAL STATISTICS. In March 1923 the Department of Commerce announced that provisional birth figures compiled by the Bureau of the Census for the first nine months of 1922 indicated lower birth rates than for the corresponding nine months of 1921. The birth rate for the first nine months was 22.8 in 1922

against 25 in 1921. The highest birth rate was shown for North Carolina (30), and the lowest for Washington (18.3). Slightly higher death rates were reported for the same period. The death rate for the nine months was 11.7 in 1922 as against 11.6 for the first nine months of 1921. The highest mortality rate was shown for Maine (14.3), and the lowest for Idaho (7.8).

Declines in the death rates from heart diseases, influenza and pneumonia and tuberculosis in all its forms, the three principal causes of death in the United States, were the outstanding features of 1921, which showed the lowest death rate recorded in any year since the beginning of the annual compilations in 1900, the Census Bureau announced 27 Dec. 1922. Increases were shown in the rate for cancer, automobile accidents and injuries, diphtheria, typhoid, suicide and homicide and several other causes.

The 1921 death rate was 11.6 per 1,000, compared with 13.1 in 1920. Those rates are for the registration area of continental United States, comprising 34 States, the District of Columbia and 16 cities in non-registration States, with a total estimated population on 1 July of 88,667,602, or 82.2 per cent of the estimated population of the United States on that date, which was 109,248,393.

The total number of deaths in the registration area was 1,032,000, compared with 1,142,558 in 1920. The rate per 100,000 was 1,163.9, compared with 1,306 in 1920. Based on the death rate for the registration area, the number of deaths for the whole United States for 1921 approximates 1,271,444.

Heart diseases were responsible for one-eighth of all deaths, or 130,351 deaths in 1921, but the rate per 100,000 declined from 149.7 to 147. Influenza and pneumonia in all forms caused 88,458 deaths, compared with 182,205 in 1920, the rate declining from 200.3 to 99.8. Tuberculosis in all its forms resulted in 88,135 deaths, compared with 99,916 in 1920, the rate declining from 114.2 to 99.4. Cancer and other malignant tumors were responsible for 76,274 deaths, compared with 72,931 in 1920, the rate increasing from 83.4 to 86.

Automobile accidents and injuries resulted in 10,168 deaths, compared with 9,103, the rate increasing from 10.4 to 11.5 per 100,000 of population.

Suicides numbered 11,136, compared with 8,959 in 1920, the rate increasing from 10.2 to 12.6. Of the suicides 4,122 were by firearms, 1,942 by hanging or strangulation, 1,739 by poison, 1,401 by asphyxiation, 712 by cutting or piercing instruments, 710 by drowning, 271 by jumping from high places, 130 by crushing and 109 by other means.

Homicides also increased, numbering 7,545, compared with 6,205 in 1920, the rate increasing from 7.1 to 8.5. Firearms accounted for 5,509 of the homicides, cutting and piercing instruments 768, and other means 1,268.

Declines were shown in the number of deaths from railroad accidents and injuries, mine accidents and injuries, machinery accidents and injuries, street car accidents and injuries.

VITAMINS. Research work on food and digestion long ago discovered the fundamental

difference between the flesh-forming and the heat-producing foods. It was found that no amount of heat-producing foods would replace flesh-formers, and that, deprived of these last, animals and men alike wasted and died almost as rapidly as though subjected to total starvation. The essential factor present in the flesh-forming foods is nitrogen. The importance of the nitrogen atom led to attention being diverted from all other elements in the food.

About the beginning of this century it became apparent that the problems of food and health were infinitely more complex than had previously been supposed. Professor Hopkins, of Cambridge University, and others observed that quantities of known foods (proteins, sugars and fats), amply sufficient in theory to enable full development to proceed, proved in practice insufficient even to sustain life if given in a pure state. Both life and growth, however, could continue if to these diets were added quantities, often extremely small, of natural substances such as milk. It was therefore concluded that in these substances were contained some additional ingredients, present in the tiniest of amounts, but still vital to the existence of life. These substances, the "accessory food factors," received the name of "vitamins," and it is around their constitution and indeed their actual existence that controversy is acute to-day. It must first be said that the existence of any actual substance corresponding to the name is a matter of pure theory. Nobody has at any time isolated any such concrete chemical substance. Nevertheless, from the researches carried out by Hopkins, Mellanby, Chick, and others in Great Britain and America, it has been decided to assume the existence of three of these substances, called respectively vitamin A, vitamin B, and vitamin C.

Vitamin A is associated with many fats and oils, especially those of animal origin, and has on this account received the name of fat soluble A. It is believed by some to be the specific factor whose absence determines the onset of rickets, and it has thus received another name, the anti-rachitic vitamin. Our greatest safeguard against rickets is undoubtedly cod-liver oil. It has been stated recently by American observers that cod-liver oil is just as specific in rickets as quinine in malaria. It is therefore assumed that cod-liver oil is especially rich in vitamin A. Many experiments have been carried out to separate the supposed vitamin from the cod-liver oil, but so far practically without any success. The substances containing these anti-rachitic qualities lose them to some extent on being heated.

The second supposed accessory food factor—vitamin B—is present in very many natural foodstuffs. In cereals it seems to be present only in the outer layers of the seeds, so that in white bread, for instance, where this layer has been removed, it is almost completely absent. Men who live for a long time on a diet of highly-milled cereals, such as polished rice or white wheat flour, tend to develop a diseased condition known as beri-beri. The condition is well marked in other animals, and birds are peculiarly susceptible to this illness. Pigeons fed on polished rice alone will develop a con-

dition of weakness very closely resembling the disease of beri-beri in man within 30 days. This substance, whatever it is, seems to be resistant to heat, and cooking does not diminish the value of any food containing it.

The third accessory food factor, present in fresh fruit and vegetables, has received the name of vitamin C. Its qualities, whatever they are, are very easily destroyed by heat, and therefore cooked or canned fruits seem almost completely deficient in this substance. It is claimed that the small quantities of vitamin C present in fresh vegetables are responsible for the prevention of scurvy, and that it is the lack of this vitamin which causes scurvy in human beings deprived for long periods of time of access to fresh vegetables. Oddly enough, milk seems to have a low percentage of this vitamin, and it is said that young children should have an addition of fresh orange juice or turnip juice to their daily diet.

Vitamins are the latest fashion in medicine. The modern specialist is as much subject to the latest fashions as any Parisian dressmaker, and some doctors have attributed an altogether ridiculous importance to these substances. (Walter Elliott, D.Sc., M.P. in "Proceedings of British Medical Association Congress." 1922.)

VIZETELLY, Ernest Alfred, English author, editor, translator, and war correspondent: b. 29 Nov. 1853; d. Hampstead, England, 26 March 1922. He was the third of the six sons of Henry Richard Vizetelly. He was educated at "The Gables," Eastbourne, England, and at the Lycee Imperial Bonaparte, now the Condorcet, Paris, and, in 1870, upon the outbreak of the Franco-German War, became a newspaper correspondent and artist (the youngest on record) for the London *Daily News*, and the *Pall Mall Gazette*, and served as secretary to his father who was special correspondent for the *Illustrated London News*. Ernest Vizetelly was in Paris during part of the German siege, but, passing out, joined the Army of the Loire, as a correspondent, being attached to the staff of the Third Division of the 21st Army Corps. With his father and brother, Arthur, Mr. Vizetelly was in Paris during the Commune that followed the evacuation of the city by the Germans. He continued to act in a journalistic capacity on the Continent for *The Yorkshire Post*, Leeds, until 1886 when he returned to London and was engaged as a translator by the publishing house of Vizetelly and Company, of which his father was the founder and head. After the liquidation of the business of Vizetelly and Company, consequent upon its prosecution for publishing translations of some of Zola's novels, Mr. Vizetelly reverted to journalism, but in later years revised and condensed English versions of most of Zola's works. He published: 'The Heptameron' (English Bibliophiles' edition, 5 vols., 1894); 'The True Story of the Chevalier d'Eon' (1895); 'With Zola in England' (1899); 'Bluebeard, Comorre the Cursed and Gilles de Rais' (1902); 'Emile Zola, Novelist and Reformer' (1904); 'The Anarchists, Their Creed and Record' (1911); 'The Scorpion' (a romance of Spain, 1894); 'A Path of Thorns' (1901); 'The Lover's Progress' (1902); 'Le Petit Homme Rouge: The Court of the

'Tuileries' (1907); 'The Favourites of Henry of Navarre' (1910); 'The Favourites of Louis "XIV"' (1912); 'Republican France, 1870-1912' (1912); 'My Days of Adventure' (1914); 'My Adventures in the Commune of Paris' (1914); 'In Seven Lands' (1916); 'The True Story of Alsace-Lorraine' (1918), and 'Paris and Her People' (1919).

VOLUNTEERS OF AMERICA, an organization along the lines of the Salvation Army, founded in 1896, for the prosecution of Christian, social, and philanthropic work in the United States. There are 10,000 enrolled workers in the several departments, such as employment bureaus, trade classes, hospital nursing, fresh air camps, food and clothing distribution, etc. The headquarters of the organization is at 34 West 28th street, New York. The president is General Ballington Booth and Secretary, J. A. Merrill.

VORARLBERG, a province of the Republic of Austria, a Crownland of the former Kingdom, with an area of 1,005 square miles and a population of 133,212. Bregenz is the chief town.

VOS, Bert John, American university professor: b. Katwykaan Zee, The Netherlands, 27 Oct. 1867. In 1888 he was graduated with the degree of A.B. from the University of Michigan and the following three years was scholar and fellow at Johns Hopkins University. He received the degree of D. Ph. from Leipzig in 1892. In 1892-93 he was instructor in German at the University of Chicago; from 1893-98 he was associate in German; from 1898-1908, associate professor of German at Johns Hopkins University. In 1908 he was made professor of German at Indiana University, which position he still holds. Doctor Vos has published: 'The

Diction and Rime-Technic of Hartman von Aue' (1896); 'Materials for German Conversation' (1900); 'Essentials of German' (1903); and has translated: Chantepie de la Saussaye's 'Religion of the Teutons' (1902). He is the editor of 'Schiller's Wilhelm Tell' (1911); Grimm's 'Kinder und Hausmächen' (1903); Heine's 'Harzreise' (1907). Doctor Vos is also a contributor to current German and American periodicals. In 1918-19 he was special assistant to the American Legation at The Hague and in the same year was member of the American mission to Berlin.

VROOMAN, Carl (Schurz), American publicist: b. Macon, Mo., 25 Oct. 1872. He was educated at Washburn College, Topeka, Kan. (1890-91), Harvard University (1891-94) and Oxford University, England (1895). In 1893 he represented Harvard University in debate with Yale University and two years later represented Oxford in debate with Cambridge University. In 1894 he began writing on public questions, his articles appearing in *McClure's*, *The Outlook*, *The Twentieth Century*, *Le Courier European*, *Review of Reviews*, *The Century*, etc. From 1898-1900 he was regent of the Kansas State Agricultural College. Mr. Vrooman spent seven years abroad, between 1894 and 1910 investigating social and economic conditions in Europe. From August 1914 to 1 Jan. 1919 he was Assistant Secretary of Agriculture and during the World War spent eight months in Europe on a special agricultural mission. At present he is farming scientifically 4,300 acres of land in central Illinois and Iowa. Mr. Vrooman has published: 'Taming the Trusts' (1900); 'American Railway Problems' (1910); 'The Lure and the Love of Travel' (1914).

W

WABASH COLLEGE, a non-sectarian educational institution for men, founded 21 Nov. 1834 and located at Crawfordsville, Ind. In 1922-23 it had a faculty of 26 members, 465 students, property valued at \$1,600,000 and an income of \$94,000. George L. Mackintosh, D.D., LL.D., is president.

WAGE LAWS, Minimum. See LABOR LEGISLATION.

WAKE FOREST COLLEGE, a Baptist educational institution for men, founded in 1834 and located at Wake Forest, N. C. In 1922-23 it had a faculty of 40 members, 815 students, property, including endowment, valued at \$1,020,000, and an income of \$150,000. William Louis Poteat, LL.D., is president.

WALES, a division of the United Kingdom, situated to the west of the central shires of England, and often called a Principality. It has an area of 7,466 square miles and in 1921 had a population of 2,206,712. Wales is divided into 12 shires: Anglesey, Brecknock, Cardigan, Carmarthen, Carnarvon, Denbigh, Flint, Glamorgan, Merioneth, Montgomery, Pembroke and Radnor. See GREAT BRITAIN.

WALKER, Williston, American university professor: b. Portland, Me., 1 July 1860; d. New Haven, Conn., 9 March 1922. He was graduated from Amherst College with the degree of A.B. in 1883; from Hartford Theological Seminary in 1886, and from Leipzig University with the degree of Ph.D. in 1888. In 1888-89, he was an associate in history at Bryn Mawr College and then went to Hartford Theological Seminary where he was associate professor of church history from 1889-92 and professor of Germanic and Western church history from 1892-1901. He was made professor of ecclesiastical history at Yale University, 1 Oct. 1901, and held that position until his death. He was a trustee of Amherst College from 1896, and secretary of the board of that institution from 1899. The degree of D.D. was conferred upon him by the Western Reserve University, Amherst College, Yale University, University of Geneva (Switzerland), and Harvard University. Marietta College conferred the degree of L.H.D. upon him in 1910. He was president of the New Haven Colony Historical Society, 1903-13; a member of the American Society of Church History, the American Historical Association, the American Antiquarian Society, the New England Historical and Genealogical Society, the Colonial Society of Massachusetts, the Connecticut Academy of Arts and Sciences, the Connecticut Society of Colonial Wars, and a fellow of the American Academy of Arts and Sciences. He published 'On the Increase of Royal Power under Philip Augustus' (1888); 'The Creeds and Platforms of Congregationalism' (1893); 'A History of the Congregational Churches in the United States' (1894); 'The Reformation' (1900); 'Ten New England Leaders' (1901);

'John Calvin' (1906); 'French Trans-Geneva' (1909); 'Great Men of the Christian Church' (1908); 'History of the Christian Church' (1918).

WALLACE, Henry Cantwell, United States Secretary of Agriculture: b. Rock Island, Ill., 11 May 1866. He was graduated B.S.A. from the Iowa State College in 1892. From 1887-91 he farmed and raised purebred live-stock in Adair County, Iowa; from 1893-95 he was professor of dairying in the Iowa State College, and editor of the *Creamery Gazette and Farm and Dairy*; from 1895-1916 he was manager and associate editor of *Wallace's Farmer*, and thereafter editor until 4 March 1921 when he became Secretary of Agriculture in President Harding's cabinet. He is recognized as one of the most efficient of the cabinet members, and his administration of his office has been generally commended. Mr. Wallace was a member of the United States Livestock Industry Commission (executive committee) during the World War; member, National War Work Council, Y. M. C. A.; member, International Committee, Y. M. C. A.; chairman, State Executive Committee, Iowa, Y. M. C. A. (1914-20); secretary, Corn Belt Meat Producers' Association (14 years); permanent chairman, National Shippers' Conference; member, Executive Committee, Roosevelt Memorial Association; member, National Forest Reservation Commission, and War Finance Corporation. He is a member of the Delta Tau Delta and Phi Kappa Phi fraternities, and of the Prairie, Des Moines, Grant, Golf, and Country clubs, Chevy Chase and other clubs.

WALLACHIA, a district of the Kingdom of Rumania. Area, 29,916 square miles with a population of 4,716,291. Bucharest is the chief city. See RUMANIA.

WALLER, Augustus Désiré, English physiologist: b. Paris, France, 12 July 1856; d. London, England, 11 March 1922. His father, Augustus Volney Waller, was a well-known physician and a Fellow of the Royal Society. The younger Waller was educated in Geneva and at the universities of Aberdeen and Edinburgh, taking the degree of M.D. at the latter. From the beginning he was more interested in research than medical practice and after his marriage devoted himself entirely to physiological research. He first gained distinction by his discovery of the electromotive action of the human heart and his invention of the first electrocardiogram for displaying and recording this action. Following the work of the Hyderabad Chloroform Commission, he investigated conditions relating to chloroform anesthesia together with the dangers incident to its use. It was his contention that the latter depended not so much on the total dose administered as upon the percentage of chloroform vapor in the inhaled air. He devised a balance for regulating this pro-

portion and claimed that for human beings and animals chloroform administered in accordance with his methods was the safest anæsthetic. Doctor Waller also made extensive investigations into the electrical phenomena of plants and during the last two years of his life devoted much of his time to devising apparatus for displaying and recording emotional states by means of a mirror galvanometer. He demonstrated in his own laboratory, in the Royal Institution and in Paris, that in normal persons the apprehension of pain caused a greater effect than pain itself and that emotional states could be revealed against the will of the patient. He entertained the idea that practical use might be made of his apparatus by attaching it to suspected persons while they were undergoing cross-examination. For several years prior to his death Doctor Waller had been director of the physiological laboratory of the University of London. He was a Fellow of the Royal Society; corresponding member and associate member of Société de Biologie, Paris; member, Physiological Society of Moscow; member, Royal Academies of Medicine, Rome and Belgium; honorary member, Council of University of Tomsk. Many universities and other institutions of learning conferred upon him academic distinctions, including the degrees of LL.D. and Sc.D. He published 'Introduction to Human Physiology'; 'Animal Electricity' (1897); 'Signs of Life' (1903); 'Physiology: The Servant of Medicine' (1910); 'The Psychology of Logic' (1912), also numerous scientific papers in the *Journal of Physiology* and other periodicals.

WANAMAKER, John, American merchant: b. Philadelphia, Pa., 11 July 1838; d. there, 12 Dec. 1922. He was the son of Nelson and Elizabeth (nee Kochersperger) Wanamaker. He was educated in the public schools of Philadelphia, leaving school at 14 to become errand boy in a book store at \$1.25 a week. He removed with the family to Indiana but returned to his native city in 1856 and there secured employment as salesman in a clothing store. While so employed he wrote, edited and published a small newspaper called *Everybody's Journal*. In 1861, with Nathan Brown, he established the clothing house of Wanamaker & Brown in Philadelphia. About the same time he married Mary B. Brown, his partner's sister, who died 20 Aug. 1920. In 1876, Mr. Wanamaker established his department store in Philadelphia and there began to give full sway to those pioneer selling ideas which made his business unique. In 1896 the A. T. Stewart business in New York was in financial difficulties. Mr. Wanamaker bought it and rehabilitated it, and at his death it was one of the great stores of the country.

Mr. Wanamaker was organizer and director of the Merchants Bank of Philadelphia and for several years served as director of the Southern Railway. He was one of the founders and directors of the Presbyterian Hospital, of which he and Mrs. Wanamaker built the children's ward. For a number of years he was manager of the University Hospital. He founded the Bethany Dispensary and was founder and president of the First Penny Savings Bank. In June 1921 Mr. Wanamaker was made honorary chairman of the Board of Directors of the Sesqui-

Centennial Association, which plans to hold a world's fair in Philadelphia in 1926.

Both politics and finance absorbed Mr. Wanamaker's interest and activity. He became active in his city and State as a Republican of independent proclivities, firmly opposed to the tactics of "the machine." He declined nomination to the 48th Congress as well as the independent candidacy for mayor of Philadelphia in 1886. He was, however, Presidential elector two years later and served as member of the Republican National Committee, 1889-93. He became Postmaster-General in the Cabinet of President Harrison, serving throughout the four years of that administration. He advocated many important business changes in the postal administration. He urged that the rates of postage be lowered, that a parcel post system be established and that the Government take over the telegraph lines and furnish telegraph service for 10 cents.

The merchandising policy of Mr. Wanamaker was regarded as revolutionary in his day. He marked every piece of merchandise in his store in plain figures; he extended to his customers the then revolutionary privilege of returning any purchases which they found unsatisfactory; he bought advertising space in staggering quantities and converted it into plain-spoken announcements of things offered on the Wanamaker counters that his multitude of customers learned to believe, and to the very end he wrote himself those little "editorials" that became a feature of the Wanamaker advertisements. A great tribute to his merchandising career was accorded him in 1921. In the ceremony at Congress Hall in Philadelphia, Mr. Wanamaker was presented with the freedom of the city and was later the guest of honor at a dinner attended by prominent men of all parts of the country. Among the tributes of the day were a gift and message from the Emperor and Empress of Japan.

Mr. Wanamaker was the first salaried secretary in America of the Young Men's Christian Association in 1858 and was one of the founders of the Christian Commission during the Civil War and one of the organizers of the Centennial Exposition of 1876. Mr. Wanamaker was a Presbyterian. As a comparatively young man he founded a Sunday school in the Bethany Presbyterian Church which was one of his life interests and which became one of the largest in the country. His service of 64 years as superintendent of this school is believed to be a world's record. For many years he served as president of the Pennsylvania State Sunday School Association, finally becoming honorary president. For some 25 years he was a member of a special committee on Sabbath observance of the Presbyterian Church and was also director of the Lord's Day Alliance. He founded and erected Y. M. C. A. and college buildings in India, China, Japan and Korea and built many churches and other institutions. In April 1916, in celebration of the 55th year of the founding of the house of Wanamaker, he endowed permanently the American University of Trade and Applied Commerce, an integral part of the stores. Mr. Wanamaker, during his wide travels about the world, gathered together a notable assemblage of art objects, but his collections were marred on three different occasions by destruc-

tive fires. The French Government made him an officer of the Legion of Honor and he received the degree of LL.D. from Ursinus College, Howard University and the University of Pennsylvania.

WAR FINANCE CORPORATION. This agency of the United States Government, was created in 1918 to give financial support to industries whose operations were "necessary or contributory to the prosecution of the war" and to banking institutions that aided in financing such industries. It was authorized also to make advances to savings banks and building loan associations, to buy and sell obligations of the United States Government, and to issue bonds secured by its own assets. Its paid in capital was fixed at \$500,000,000, all of which was subscribed by the Government, and provision was made for the administration of its activities through a board of five directors, with the Secretary of the Treasury as an ex-officio member and chairman of the board.

The Corporation was in existence only six months before the armistice was signed, but even in that short period it handled a large volume of business and fulfilled a useful and effective function in the program of war finance. When hostilities ceased, its operations were contracted automatically but its continued usefulness was soon demonstrated when it was called upon to undertake the burden of financing the railroads, then under Federal control, because of the temporary failure of the Congress to make an appropriation for the maintenance of their operations.

Under its war-time powers, the Corporation made advances totaling \$306,742,154. Its authority to buy and sell obligations of the United States Government also was exercised on a large scale, the Corporation serving as an intermediary between the "Bond Purchase Fund" of the Treasury and the open market for Government securities, purchasing bonds whenever such action was necessary in order to stabilize the market and later turning them over to the Treasury for retirement when the condition of the Bond Purchase Fund permitted. Altogether, the Corporation bought from 22 May 1918, to 16 April 1920, Government securities having an aggregate par value of \$1,889,122,000.

In March 1919, in order that it might assist in the transition from the conditions of war to the new conditions of peace, the Corporation was granted authority by the Congress to make advances, to the extent of \$1,000,000,000, to American exporters and to American banking institutions which chose to extend credits to foreign buyers. A number of loans were made under this authority and many applications were pending when the activities of the Corporation were discontinued in May 1920, at the request of the then Secretary of the Treasury. In January 1921, the Congress passed a joint resolution ordering the Corporation to resume operations. Its powers, which were then restricted to the financing of exports, were subsequently enlarged by the passage of the Agricultural Credits Act in August 1921, which authorized it to make loans for agricultural purposes to banking and financing institutions and to co-operative marketing associations.

The Corporation's activities under this Act

have been conducted on a nation-wide scale. To 30 Nov. 1922, it has made or approved advances for agricultural and live stock purposes aggregating \$433,647,000 in 37 States. The loans authorized on live stock in the West total \$90,000,000; on cotton in the South, \$81,847,000; on grain in the Northwest, Middle West, and Southwest, \$36,790,000; on peanuts in Virginia, \$2,044,000; on tobacco in Kentucky, Indiana, and Ohio, as well as in North Carolina and neighboring States, \$40,000,000; on rice in California, Arkansas, and Louisiana, \$10,250,000; on sugar beets in Utah, \$11,438,000; \$2,098,000 on other agricultural commodities; and for general agricultural purposes, \$159,180,000. These loans have reached the farmers and stockmen through 4,400 banks, through 34 co-operative marketing associations having a total membership of about three-quarters of a million farmers, and through 100 live stock loan companies. In addition, the Corporation since January 1921, has authorized advances totaling \$53,000,000 to assist in financing exports principally of grain, tobacco, cotton, and other agricultural products.

The loans made by the Corporation for agricultural purposes strengthened the banking situation in the country districts and relieved the necessity for forced liquidation. They put the banks in position to carry their farmer customers for a longer period and also to make new loans. They checked demoralization, helped to restore confidence, aided in the stabilization of markets for agricultural commodities, and were a vital factor in bringing about a marked improvement in the business and economic situation throughout the country.

The Board of Directors is composed of the following members: The Secretary of the Treasury, Chairman; Eugene Meyer, Jr., Managing Director; George R. Cooksey, Fred Starek and Frank W. Mondell, directors. The Secretary of Agriculture was added to the Corporation by the Agricultural Credits Act.

EUGENE MEYER, JR.,
Managing Director.

WARD, Geneviève (Lucy Geneviève Teresa, COMTESSE DE GUERREL), American singer and tragedienne: b. New York, 27 March 1838; d. Hampstead, England, 18 Aug. 1922. She was a daughter of Col. Samuel Ward and a granddaughter of Gideon Lee, once Mayor of New York City. At the age of 17 she married Count Constantine de Guerbel, a Russian, but the union proved to be an unhappy one and the couple separated. Having studied vocal music in Italy and Paris, Mme. Ward made her debut as an opera singer under the name of Mme. Ginevra Guerrabella at Milan in 1856 in Paino's opera 'Stella di Napoli.' She sang for two more seasons in Italy before going to Paris to take the part of Elvira in 'Don Giovanni.' Thereafter she appeared in concerts in London where her success was striking. In 1862 she returned to America where she made her first appearance as Violetta in 'La Traviata.' The following season she appeared in Cuba and while there contracted diphtheria which destroyed her singing voice and brought her operatic career to a premature close. She then determined upon a dramatic career and while studying for the stage earned a livelihood by teaching singing. She re-

turned to England in 1873 and recorded an instantaneous success in her first appearance upon the dramatic stage as Lady Macbeth in the Theatre Royal, Manchester. Thereafter she appeared in many tragic roles, winning the distinction of being one of the greatest tragediennes of her time. She revisited the United States in 1878 and made her first appearance on the American dramatic stage at Booth's Theatre, New York, as Jane Shore in a play of that name, following it with several Shakespearean roles. Returning to London the following year, she leased the Lyceum Theatre and produced 'Forget-Me-Not' and 'L'Aventuriere.' During 1881-82 she toured the United States and Canada in 'Forget-Me-Not,' in which she appeared more than 2,000 times and which was her greatest success. She played with Sir Henry Irving, 1893-97. After 1900 her stage appearances were rare. However, in 1910 she joined F. R. Benson's company and appeared for a time in a repertory of Shakespearean plays. On her birthday in 1921 King George V conferred upon her the Order of Dame Commander of the British Empire. Consult: Wickoff, 'Memoir of Ginerva Guerrabella' (New York, 1863); Gustafson, 'Geneviève Ward' (Boston, 1882); William Winter 'Shadows of the Stage' (New York, 1892).

WARD, Sir Leslie, British caricaturist: b. London, England, 21 Nov. 1851; d. there, 15 May 1922. He was the only son of the late E. M. Ward, R.A., and his great grandfather was the famous painter, James Ward, and so he claimed connection through marriage with George Morland. His mother, who survived him, was Henrietta Ada Mary Ward and she too had considerable success as an artist. At first young Ward was intended, after leaving Eton, for the profession of architect, but after studying under Sidney Smirke he withdrew from the pursuit and entered the Royal Academy as an ordinary student. Brought up amongst artists and literary men, he was accustomed to celebrities from his earliest days, and when at the age of 21 he contributed his first caricature to *Vanity Fair* he had already a fair knowledge of his subject. His first cartoon was of Professor Owen. He adopted the pseudonym of "Spy" by a chance opening of the dictionary. From 1873 to 1909 his cartoons appeared in the periodical above named, but in his later years he devoted considerable time to portraiture. He was a member of the Royal Society of Portrait Painters. In 1899 he married Judith Mary Topham-Watney, by whom he had one daughter. From time to time he exhibited architectural, oil-color and water-color portraits in the Royal Academy and elsewhere. In 1918 he was knighted. Sir Leslie in his sprightly volume, 'Forty Years of Spy,' published in 1915, gives a full and candid account of the life of a popular caricaturist. Everyone, he said, was caricaturable, even the man who said, "Now I myself, for instance, I have nothing peculiar about me. If you were to caricature me my friends would not recognize me." Another type was the man who posed, and then said, "Oh, I forgot. The photographer tells me this is my worst side. I must turn the other towards you, if you don't mind." Ward thanked him for the tip. So expert did he become that,

once getting a sudden impression of his own face from the side in a mirror, he came to this rapid conclusion, "I looked the sort of person sideways that I should have disliked if I had known him." Writing of the art of caricature, he said, "In the early days of *Vanity Fair* people viewed caricature as something entirely new and, in the light of this novelty, viewed it in the right spirit. Later they grew particular, and as they frequently paid (from which I did not benefit), an entirely new type of subject came to me. It was as though a spirit of commercialism crept between me and my sitter."

For two generations Ward was known as the chief caricaturist of England. Rarely did he wound anyone and he counted most of his subjects as his friends. His art was indeed that of humorous portraiture, and just as Lawrence would paint his ladies until their friends saw a likeness coming and then he would leave off, so "Spy" seemed to leave off whenever his sitter's friends saw a caricature coming. He was a shy man who seemed to feel his position keenly when hunting his quarry, and there are no records of biting and explosive sayings from him like those that made Peregrini feared and followed. Some of his early cartoons are the most forceful, such as his sketch of the first Lord Lytton and his caricatures of Mr. Charles Cox, Sir James Spoforth, Lord Haldon, and, especially Disraeli.

WAREHOUSE ACT, United States. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

WAREHOUSES, Federal Licensed. See AGRICULTURE, UNITED STATES DEPARTMENT OF.

WARREN, Lloyd, American architect: b. 1870; d. New York, 25 Oct. 1922. He studied seven years in Paris in the Atelier Daumet Esquie, and after returning to New York in 1899 became interested in the formation of the Society of Beaux-Arts Architects. He was for a time connected with the firm of Warren & Wetmore, with his brother, Whitney Warren, but 20 years before his death withdrew to devote himself to the building up of a system of architectural instruction in the United States. He began with a studio in New York with 10 students and from this he built up a system which passes upon the work of students in 26 universities and many more studios and which in 1921 examined more than 2,500 designs submitted by 1,400 pupils throughout the country. About 1912 he organized a School of Sculpture, Painting and Decorations in the Beaux-Arts Building, 126 East 75th Street and was its director. He also instituted the Paris prize which has a recognized rank abroad. Mr. Warren also organized the Art School of the A. E. F. in France after the armistice. He was made a member of the Legion of Honor and Yale gave him the degree of M.A. in 1921.

WARTBURG COLLEGE, a Lutheran educational institution for men, founded in 1868 and located at Clinton, Iowa. In 1922-23 it had a faculty of 9 members, 114 students, property valued at \$145,000 and an income of \$40,000. Rev. Otto L. Proehl, A.B., is president.

WASHINGTON, a Pacific Coast State, bounded north by British Columbia, east by Idaho, south by Oregon and west by the Pacific Ocean. It has an area of 69,127 square miles.

and in 1920 had a population of 1,356,621. The State is 19th in order of size and 30th in order of population. During the decade from 1910 to 1920, the population increased 18.8 per cent. The distribution of population in 1920 according to color was: white, 1,319,777; negroes, 6,883; Indians, 9,061; Japanese, 17,387; Chinese, 2,363, and all others 1,150. The foreign-born white population in 1920 numbered 250,055. Within the State there are 18 Indian reservations with a combined area of 2,655 square miles and with a total population of 11,114. The chief cities, with their populations in 1920, are: Seattle, 315,652; Spokane, 104,437; Tacoma, 96,965; Everett, 27,644; Bellingham, 25,585; Walla Walla, 15,503; Yakima, 18,539; Aberdeen, 15,337; Vancouver, 12,637; Hoquiam, 10,058; Olympia, the capital, 7,795; Brenerton, 8,918; Centralia, 7,549; Wenatchee, 6,324, and Puyallup, 6,323.

Religion.—The principal Christian denominations have a combined membership of 283,709, including 97,418 Roman Catholics, 40,020 Methodists, 30,559 Presbyterians, 17,738 Baptists, 16,137 Congregationalists, 17,359 Lutherans and 10,881 Episcopalians.

Education.—The State appropriation for education in 1922 was \$9,540,793. There are 10,586 teachers in the public schools of the State and 294,013 pupils; 281 high schools with 1,795 teachers and 42,419 pupils, and three public normal schools with 168 professors and about 1,000 students. For higher education there are in the State the University of Washington, the University of Puget Sound, State College at Pullman, Gonzaga College, Whitman College, and a number of special schools.

Finances.—On 1 April 1921 the balance in the State treasury amounted to \$9,492,444.65. Receipts during the fiscal year, 1 April 1921 to 31 March 1922, amounted to \$37,886,381. Disbursements for the same period totaled \$40,529,956.19, leaving a balance on hand 1 April 1922 amounting to \$6,848,869.46. The estimated receipts for the fiscal year 1 April 1922 to 31 March 1923 totaled \$21,786,992, while authorized expenditures for the same period amount to \$23,629,182.11. The bonded debt of the State is \$12,500,000 incurred for a soldiers' bonus. The assessed value of real property in 1922 was \$822,823,009; of personal property, \$208,850,224. The assessed value of steam and electric railways and telephone companies in the same year was \$145,566,007.

Agriculture.—Agriculture is developing rapidly in Washington. All the cereals, vegetables, forage crops and fruits of the temperate zone are produced. The value of all farm crops in 1920 was \$227,212,008. In that year there were 66,288 farms having a land value of \$797,651,020, buildings valued at \$122,741,321, implements and machinery \$54,751,377, and livestock \$82,316,130. The land area of the farms of the State was 13,244,720 acres. Eastern Washington contains the famous wheat areas known as the Big Bend, and Palouse country, also the Yakima and Wenatchee apple districts. Western Washington is becoming noted as a dairy country and some of the largest condensaries and butter and cheese plants are operated in this area. Irrigation is being developed more and more by government and private installation. It is most ad-

vanced in the Yakima, Wenatchee, Okanogan, Spokane and Walla Walla valleys on the east of the Cascades. Of the entire land in farms 7,129,343 acres is improved land, while 1,813,061 acres comprise the area of the woodland in farms. In 1920 the State produced 474,764,169 pounds of milk, valued at \$11,869,104; 24,313,252 pounds of creamery butter, valued at \$13,960,736; full cream American cheese, 1,468,916 pounds, valued at \$398,935. The value of by-products was \$2,686,706, and there were 2,114,833 gallons of ice cream, valued at \$2,712,089. The wool clip of the State is over 5,000,000 pounds yearly. The chief crops, with their acreage, yield and value for the year 1922 were: corn, 67,000 acres, 2,747,000 bushels, \$2,884,000; spring wheat, 1,000,000 acres, 9,200,000 bushels, \$9,568,000; winter wheat, 1,426,000 acres, 23,244,000 bushels, \$24,174,000; barley, 74,000 acres, 1,813,000 bushels, \$1,342,000; oats, 202,000 acres, 7,959,000 bushels, \$4,616,000; rye, 19,000 acres, 169,000 bushels, \$161,000; hops, 1,000 acres, 1,550,000 pounds, \$155,000; tame hay, 987,000 acres, 2,310,000 tons, \$37,422,000; potatoes, 65,000 acres, 9,425,000 bushels, \$4,241,000; apples, 25,678,000 bushels; peaches, 1,125,000 bushels, and pears, 1,708,000 bushels. The livestock interest is centred mostly in the east on the great ranges. On 1 Jan. 1923 there were in the State 278,000 horses, valued at \$19,460,000; 22,000 mules, valued at \$1,826,000; 283,000 milk cows, valued at \$17,263,000; 253,000 other cattle, valued at \$6,679,000; 520,000 sheep, valued at \$4,160,000 and 217,000 swine, valued at \$3,212,000. To this may be added about 3,500,000 chickens and 53,940 hives of bees.

Mining.—All the basic minerals are found in the State. Coal was produced to the extent of 2,400,000 tons in 1922. Other minerals are gold, copper, silver, lead and zinc. There are granite, sandstone, marble and limestone quarries, and cement is becoming an important product. The value of the gold, silver, copper, lead and zinc produced from mines in Washington in 1922 was \$573,000, as compared with \$332,313 in 1921. The improvement of the metal market, especially during the last part of the year, resulted in an increase of all five metals, but the total value was much less than the average of the last 10 years. The mine production of gold increased from \$128,486 in 1921 to \$181,700 in 1922. The mine output of silver increased from 142,450 ounces in 1921 to 192,000 ounces in 1922. A large part of the silver was recovered in smelting silver-copper ore from Chewelah. The mine output of copper increased from 251,544 pounds in 1921 to 335,000 pounds in 1922. The mine output of lead increased from 143,553 pounds in 1921 to 1,500,000 pounds, valued at \$85,500 in 1922.

Forestry and Lumber.—There are nearly 10,000,000 acres under forests in the State, containing about 330,000,000,000 feet of standing timber, including Douglas fir, yellow and white pine, larch, cedar, spruce and other trees. The average cut is 4,000,000,000 feet yearly, which makes Washington the chief lumber producing State. Its lumber product goes all over the globe.

Manufactures.—The latest report on the manufacturing industries of Washington shows 4,919 industrial establishments, employing 150-

480 persons and having capital invested amounting to \$553,125,000, and turning out goods to the value of \$809,635,000. The leading industries, arranged according to value of products, are as follows: Lumber and timber products, flour and grist mill products, canning and preserving, slaughtering and meat packing; butter, cheese, eggs, milk and poultry, printing and publishing, foundry and machine shop products, cars and general railroad shop work, bread and bakery products, confectionery and ice cream. The value of the 1920 lumber cut in Washington was \$195,000,000. In that year 4,847,000,000 shingles were produced in the State and 404,942,000 pieces of lath.

Communications.—The State has 42,428 miles of highways, exclusive of the streets in cities and towns. Of this mileage 2,040 miles are improved State highways, while 25,260 miles are county roads. The total cost of the State highways to date is \$50,362,030. In the completed highways there are 794 miles of concrete pavement. In 1922 up to 23 August, Washington had 164,146 licensed pleasure automobiles and 32,345 commercial cars. The fees collected from these were approximately \$3,000,000. This money is used for maintenance and new highway construction after the administrative expense is deducted. There is also paid into the road fund of the State a tax of one cent per gallon on all gasoline sold for motor vehicle use. Steamers ply regularly on the Columbia and other rivers and several lines of steamers sail from Seattle to China, Japan and the Philippines and also to Europe. There are 7,592.26 miles of steam railways in the State and 1,059.93 miles of electric railways.

Charities and Corrections.—In 1922 the number of inmates in the principal State institutions were as follows: Custodial School, 763; Girls School, 128; Training School, 196; Penitentiary, 742; Reformatory, 360; Eastern Hospital, 1,262; Northern Hospital, 988; Western Hospital, 1,435; Soldiers' Home, 177; Veterans Home, 383; Deaf School, 117, and Blind School, 56.

Legal Holidays.—1 January; 12 February; 22 February; 30 May; 4 July; Labor Day; 12 October; 11 November; Thanksgiving Day; Christmas Day, and General Election Day.

Government.—The executive is a Governor, elected for a term of four years, who receives a salary of \$6,000. The legislature consists of two chambers, a Senate and a House of Representatives. The lower house is composed of not less than 63 nor more than 99 members. The number of Senators must not be more than half nor less than one-third of the members of the House. Senators are elected for four years and Representatives for two years. The legislature meets biennially on the first Wednesday after the first Monday of January in odd years.

Officials.—The officials in 1922 were: Governor, Louis F. Hart; Lieutenant-Governor, W. J. Coyle; Secretary of State, J. Grant Hinkle; Attorney-General, L. L. Thompson; Auditor, C. W. Clausen; Treasurer, Clifford L. Babcock, and Superintendent of Education, Josephine Corliss Preston.

Judiciary.—Members of Supreme Court: (1922) Emmett V. Parker, Chief Justice; John F. Main, John R. Mitchell, O. R. Holcomb, Ken-

neth Mackintosh, W. W. Tolman, Mark A. Fullerton, J. B. Bridges and C. R. Hovey, Associate Justices. The members of the Supreme Court in 1923 are: John F. Main, Chief Justice; Emmett N. Parker, John R. Mitchell, O. R. Holcomb, Kenneth Mackintosh, W. W. Tolman, Mark A. Fullerton, J. B. Bridges and J. H. Pemberton, Associate Justices.

WASHINGTON COLLEGE, a non-sectarian, co-educational institution, founded in 1723 and located at Chestertown, Md. Statistics for 1922-23 show a faculty of 13 members, 165 students, property valued at \$350,000 and an income of \$59,000. Clarence P. Gould, Ph.D., is president.

WASHINGTON CONFERENCE. The history of the Washington Conference opens in December 1920, when the *New York World* began what immediately became much more than a newspaper campaign in favor of disarmament. What especially stirred public opinion was the growing tension between the United States and Japan in the Near East. Messages advocating disarmament were received from an impressive array of public men, officially and unofficially representative of the Vatican, the other religious communions, Great Britain, Japan and many nations. The names included Chief Justice Taft, General Pershing, General Tasker Bliss, Judge E. H. Gary, Bernard Baruch, Herbert Hoover, Colonel E. M. House, W. J. Bryan, Lloyd George (then Prime Minister), Cardinal Gasparri (writing for Pope Benedict XV), Viviani (former Prime Minister of France), Tardieu (former French High Commissioner to the United States), Viscount Uchida, Japan's Foreign Minister, Baron Hayashi (Japanese Ambassador in London), and the German writer, Maximilian Harden—to mention but a few of the responses. On 24 Dec. 1920, Walter H. Long, First Lord of the British Admiralty cabled: "We (the British) have had different standards: our strength was at one time superior to the three next strongest powers; then to the two; now all that we are suggesting is that our strength be equal to the next power."

This meant that Britain surrendered command of the ocean and was prepared for naval equality with the United States.

The Senator who seized the opportunity was William E. Borah. He brought forward a resolution, calling for a Conference of the three naval powers, the United States, Great Britain and Japan, the object of which would be to reduce armaments at sea by one-half. Senator Walsh, Democrat, proposed an alternative resolution, calling upon the President—Woodrow Wilson—to appoint an American delegate to the Disarmament Commission of the League of Nations. In February 1921, Sir Auckland Geddes, the British Ambassador to the United States, proceeded to London, there to discuss the situation, about which uneasiness was increasing. On the one hand, the United States Navy had been concentrated at bases, facing the Pacific, instead of the Atlantic Ocean. On the other hand, Great Britain had to decide upon what pretext, if any, she could break the Anglo-Japanese Alliance, renewable in 1921, and so disentangle herself from any possible dif-

ferences with the United States. In 1911, a clause was inserted in the treaty whereby it was made clear that "nothing in the alliance shall entail upon a contracting power the obligation to go to war with any third power which has concluded 'a treaty of general arbitration' with the said contracting power." By this formula, it was assumed that Great Britain would be relieved of all obligation to take the side of Japan against the United States, with whom she was negotiating such a treaty of general arbitration. But in 1912, the Senate rejected this treaty and no substitute was found except in the so-called Bryan treaty which provides for a commission of enquiry into disputes and not for arbitration. Critics of British policy thus held that technically she was still bound to Japan, even against the United States, on which matter, however, Great Britain formally declared that she was not so bound but regarded the Bryan Treaty as one of general arbitration. Historically, the Anglo-Japanese Alliance was entered into at a time when opinion in the United States favored Japan. The objective of the alliance was not the United States but Russia and Germany which were then formidable empires.

In March 1921, President Harding took office. While Congress had not as yet passed any resolution calling for a Conference, it had forced upon President Wilson a reduction in the strength of the army, first from 500,000 men, demanded by the administration, to 280,000 men, and later to 175,000 men, to reach which figure recruiting was suspended. In the House of Representatives (5 Feb. 1921), this reduction, after veto by the President, was carried by 271 votes to 16.

The agitation for disarmament continued. Favorable mass meetings were held in Japan. In Great Britain, the Navy League announced (30 April 1921): "With the disappearance of the German fleet, the world's naval position changed completely, and civilization is no longer threatened by any maritime power. This committee now reiterates its deliberate opinion that there is no halfway house between the suicidal policy of competitive building and international agreement."

The Navy League, therefore, demanded "at the earliest possible moment, a conference between the naval powers with a view to the limitation of armaments." Such an opinion from the big navy group itself in Great Britain was significant. Cynics might and did attribute it to Britain's desire to scrap battleships that had become obsolete and to her knowledge that in any competition on sea, the United States had the longer purse. But Viscount Grey put the case more truly when he said (February 1921): "I prefer the chance of Utopia to the certainty of destruction." More incisive still was the message from William G. McAdoo, "disarm or bust," (10 May 1921).

It was public opinion that carried Congress and ultimately the administration. Despite the opinion of General Pershing, the House of Representatives refused to vote an army of more than 150,000 men, and on 8 June 1921, the Senate reluctantly abandoned the higher establishment of 175,000 men. For the navy, the Senate voted

\$494,000,000. The House cut this figure to approximately \$417,000,000 and—more important than the figures—there was attached to the bill a resolution in the name of Senator Borah. This resolution asked the President to call a conference of the United States, Great Britain and Japan to be "charged with the duty of promptly entering into an understanding or agreement by which the naval expenditures and building programs of each of the said governments . . . shall be substantially reduced annually during the next five years." On 25 May 1921, the Senate, with 74 voting, unanimously accepted this resolution which passed the House of Representatives on 29 June by 330 votes to 4. On 26 July 1921, Samuel Gompers, President of the American Federation of Labor, wrote approving of the proposed Conference.

In June 1921, an Imperial Conference of the British Dominions was held in London where it was abundantly clear that opinion favored overtures for a conference from the United States. Such overtures were made and on 11 Aug. 1921, President Harding issued invitations for a Conference to open on Armistice Day, 11 November.

It was only with Japan that any preliminary difficulty arose. The invitation called for a conference, not only on disarmament but on Pacific or Far Eastern questions. This meant that the United States insisted on a settlement with Japan accompanying an agreement to limit navies. Japanese feeling was deeply stirred and her acceptance of the invitation was subject to a promise that she should be consulted as to the agenda, so that "introduction therein of problems such as are of sole concern to certain particular powers, or matters that may be regarded as accomplished facts, should be scrupulously avoided." The object was clearly to exclude from discussion questions like the mandate over the Pacific Islands north of the equator and especially Yap; Shantung; Korea; and the Japanese occupation of Siberia. It was with some hesitation that Japan accepted the agenda finally adopted. At Washington, Korea, Port Arthur and Dairen were, in fact, treated as settled items, while the future of Yap was considered privately between the United States and Japan alone.

Five great powers were included in the conference—the United States, the British Commonwealth, France, Italy and Japan. But, for the discussion of Pacific questions only, four other powers were invited, namely Belgium, China, the Netherlands and Portugal. The United States was represented by Secretary Hughes, Chairman of the Conference, ex-Secretary Elihu Root, Senator Lodge (Republican Chairman of the Senate Foreign Affairs Committee), and Senator Oscar W. Underwood (Democrat, Alabama).

Great Britain was represented by A. I. Ralfour, former Prime Minister (who was also delegate for Australia); Lord Lee of Fareham, First Lord of the Admiralty; Sir Auckland Geddes, Ambassador at Washington; Sir Robert Borden, Former Prime Minister of Canada; G. F. Pearce, Defence Minister, Australia; Sir John Salmond, New Zealand, and Srinivasa Sastri, India. David Lloyd George was not

able to attend. France was represented by Aristide Briand, Prime Minister; Rene Viviani, Former Prime Minister; Albert Sarraut, Colonial Minister, and Jules Jusserand, her Ambassador at Washington. The spokesmen for Italy were Senator Carlo Schanzer; Ambassador Vittorio Rolando-Ricci; Senator Luigi Albertini; Representative Filippo Meda. Japan was represented by Admiral Tomisaburo Kato, Minister of the Navy; Ambassador Kijuro Shidehara; Prince Iyesato Yokugawa, President of the House of Peers, and Masanao Hanihara, Vice Minister of Foreign Affairs.

Of the other powers, the leading delegates were: Belgium, Ambassador Baron de Cartier; China, Sao-Ke Alfred Sze, Minister to the United States and V. K. Wellington Koo, Minister to Great Britain; Netherlands, Jonkheer H. A. van Karnebeek, Foreign Minister, and Portugal, Viscount de Alte, Minister to the United States. The Secretary General of the Conference was John W. Garrett. The agenda was as follows:

Disarmament.—(1) Limitation of naval armament; basis of limitation, extent of limitation; fulfillment of conditions; (2) Rules for control of new agencies of warfare; (3) Limitation of land armament.

Pacific and Far Eastern Questions.—(1) Questions relating to China; principles to be applied; (2) Application to subject: (a) Territorial integrity; (b) Administrative integrity; (c) Open door; equality of administrative, and industrial opportunity; (d) Concessions, monopolies and other economic privileges; (e) Development of railways; (f) Preferential railroad rates; (g) Status of existing commitments; Similarly questions for Siberia; (3) Mandated islands.

Hitherto, all international conferences of this magnitude had been held in some city of the Old World. The transference of such diplomacy to the New World was thus an event of historic significance. The Conference was attended by a numerous army of correspondents, who included W. J. Bryan, H. G. Wells, Colonel Repington and many other men of world-wide reputation. The frankness with which foreign newspapermen were accorded the same right as their American colleagues to attend at the White House and the State and other Departments created an excellent impression and dispelled many suspicions. While the proceedings were translated into French, the language chiefly employed at the Conference was English, which again marked a new departure in diplomacy. Not less startling were the solemn ceremonies with which the Conference was inaugurated. On 11 November, being Armistice Day, an Unknown Soldier of the United States was buried at Arlington, where President Harding's address concluded with the Lord's Prayer and was the first utterance by man to be heard on delivery from the Atlantic to the Pacific, by radiophone. On the 12th, at the first Plenary Session, the Conference was formally inaugurated with an invocation by Dr. W. S. Abernathy, Pastor of Calvary Baptist Church, which the president attended. These preliminaries created an atmosphere which affected the subsequent deliberations. On the

other hand, the glitter of militarism was evident in the presence of Marshal Foch and Admiral Beatty.

The Conference met in the Continental Hall of the Daughters of the American Revolution. Congress occupied the galleries and the floor was also crowded. An important element in the proceedings was the applause which broke out unrestrained, when important things were said. These demonstrations of enthusiasm, unusual at such an international gathering, showed clearly that of the two main problems to be solved—Disarmament and the Far East—it was Disarmament for which public opinion in the United States really cared. There was interest taken in an Open Door for China but far keener was the interest in preventing war.

With a reputation for cold detachment, Secretary Hughes surprised even his admirers by his warmth of generous sympathy. He started the serious business of the Conference with a speech which mapped out the entire field of discussion. First, he relegated Far Eastern problems to committees which would deal with them in detail; secondly, he stated in explicit terms the proposals to which the United States would agree for limiting armaments at sea, and, thirdly, he left it open to France or one of the other military powers to bring forward similar proposals for disarmament on land. At the second Plenary Session 15 Nov. 1921, Mr. Balfour accepted in principle the scheme of naval limitation, as did Japan, Italy and France. On 21 November, however, M. Briand, in an eloquent speech, explained why France could not at the moment, initiate a measure of disarmament on land, which item, despite the desire of Italy to advance it, is thus "unfinished business."

On 6 Feb. 1922, the Conference adjourned and on the 10th, President Harding submitted to the Senate seven treaties or agreements, as follows: (1) Covenant limiting naval armaments; (2) Treaty on noxious gases and submarines; (3) Four Power Treaty dealing with the Pacific; (4) Declaration on American rights in mandated territories; (5) Agreement defining the phrase "insular possessions and insular dominions" in the Four Power Treaty; (6) Treaty defining principles and policy in China; (7) Treaty dealing with Chinese Customs. The cost of the Conference was \$250,000.

Reduced to simple terms, the Covenant on Naval Armaments limits the ultimate battleship fleets of the five signatory powers, as follows:

Country	Tons
United States	525,000
Great Britain	525,000
Japan	315,000
France	175,000
Italy	175,000

No battleship may exceed 35,000 tons displacement nor carry guns of a calibre exceeding 16 inches.

Vessels retained by the United States are (tonnage in parentheses): *Maryland* (32,600); *California* (32,300); *Tennessee* (32,300); *Idaho* (32,000); *New Mexico* (32,000); *Mississippi* (32,000); *Arizona* (31,400); *Pennsylvania* (31,400); *Oklahoma* (27,500); *Nevada* (27,-

500); *New York* (27,000); *Texas* (27,000); *Arkansas* (26,000); *Wyoming* (26,000); *Florida* (21,825); *Utah* (21,825); *North Dakota* (20,000); *Delaware* (20,000); Total 500,650 tons.

The United States is permitted to complete two battleships of the *West Virginia* class and so replace the *North Dakota* and the *Delaware*. When this is done, her tonnage will be 525,000.

The British battleships were to be (tonnage in parentheses): *Royal Sovereign* (25,750); *Royal Oak* (25,750); *Revenge* (25,750); *Resolution* (25,750); *Ramillies* (25,750); *Malaya* (27,500); *Valiant* (27,500); *Barham* (27,500); *Queen Elizabeth* (27,500); *Warspite* (27,500); *Bombow* (25,000); *Emp. of India* (25,000); *Iron Duke* (25,000); *Marlborough* (25,000); *Hood* (41,200); *Renown* (26,500); *Repulse* (26,500); *Tiger* (28,500); *Thunderer* (22,500); *King George V* (23,000); *Ajax* (23,000); *Centurion* (23,000); Total 580,450 tons.

With the scrapping of the *Thunderer*, *King George V*, *Ajax* and *Centurion*, and the substitution of two battleships of the latest design, the British displacement will be reduced to 558,950 tons, which later will fall to 525,000 tons as seen below.

Japan's battleships were to be (tonnage in parentheses): *Mutsu* (33,800); *Nagato* (33,800); *Hinga* (31,260); *Ise* (31,260); *Yamashiro* (30,600); *Fu-So* (30,600); *Kirishima* (27,500); *Haruna* (27,500); *Hiyei* (27,500); *Kongo* (27,500); Total 301,320 tons.

The French battleships were to be (tonnage in parentheses): *Bretagne* (23,500); *Lorraine* (23,500); *Provence* (23,500); *Paris* (23,500); *France* (23,500); *Jean Bart* (23,500); *Courbet* (23,500); *Condorcet* (18,890); *Diderot* (18,890); *Voltaire* (18,890); Total 221,170 tons.

Italy's battleships were to be (tonnage in parentheses): *Andrea Doria* (22,700); *Caio Duilio* (22,700); *Cote Di Cavour* (22,500); *Giulio-Cesare* (22,500); *Lu'do Da Vinci* (22,500); *Dante Alighieri* (19,500); *Roma* (12,600); *Napoli* (12,600); *Vittorio Em'n'le* (12,600); *Regina Elena* (12,600); Total 182,800 tons.

Under strict rules affecting guns, turrets, machinery, engines, fire-control, etc., all other battleships must be scrapped, either by sinking, breaking up or, in a special case, target practice. No battleship, scheduled for scrapping, may be reconverted to war-like use. Under the Treaty, the ships to be immediately scrapped are:

United States.—*Maine*, *Missouri*, *Virginia*, *Nebraska*, *Georgia*, *New Jersey*, *Rhode Island*, *Connecticut*, *Louisiana*, *Vermont*, *Kansas*, *Minnesota*, *New Hampshire*, *South Carolina*, *Michigan*, *Washington*, *South Dakota*, *Indiana*, *Montana*, *North Carolina*, *Iowa*, *Massachusetts*, *Lexington*, *Constitution*, *Constellation*, *Saratoga*, *Ranger*, *United States*. The United States may retain the *Oregon* and *Illinois* for non-combatant purposes—say as training ships.

Great Britain.—*Commonwealth*, *Agamemnon*, *Dreadnought*, *Bellerophon*, *St. Vincent*, *Inflexible*, *Superb*, *Neptune*, *Hercules*, *Indomitable*, *Temeraire*, *New Zealand*, *Lion*, *Princess Royal*, *Conqueror*, *Monarch*, *Orion*, *Australia*, *Agincourt*, *Erin*.

Four other ships are to be "scrapped" which are building or projected; but the *Colossus* and

Collingwood may be retained for non-combatant purposes.

Japan.—*Hizen*, *Mikasa*, *Kashima*, *Katori*, *Satsuma*, *Aki*, *Settsu*, *Ikoma*, *Ibuki*, *Kurama*, *Amagi*, *Akagi*, *Kaga*, *Tosa*, *Takao*, *Atago*. Japan "scraps" a program of eight projected ships, not laid down and may retain *Shikishima* and *Asahi* for non-combatant purposes.

The battleship fleets remaining are:

	Pre-Jutland	Post-Jutland
United States	15	3
Great Britain	21	1
Japan	8	2
France	7	...
Italy	6	...

The post-Jutland battleships, embodying as they do the results of experience in that battle, have rendered the pre-Jutland battleships already obsolescent.

The rules for replacement were based on the reckoning that the life of a battleship is 20 years. After 17 years, a new battleship may have its keel laid, three years being allowed to complete it. Also there must be no new construction begun for ten years, that is, until 1931, except in special cases already mentioned. The Japanese were unwilling to scrap the nearly completed *Mutsu*, which had been partly built by public subscription. Hence, we have the two *West Virginias* allowed, before 1931, to the United States and the two post-Jutland battleships allowed Great Britain.

The tables of replacement are:

UNITED STATES

YEARS	Scrapped	Completed	Pre-Jutland	Post-Jutland
1922-1933			15	3
1934	<i>Florida</i> (23).....	2	12	5
	<i>Utah</i> (23).....			
	<i>Wyoming</i> (22).....			
1935	<i>Arkansas</i> (23).....	2	9	7
	<i>Texas</i> (21).....			
	<i>New York</i> (21).....			
1936	<i>Nevada</i> (20).....	1	7	8
	<i>Oklahoma</i> (20).....			
1937	<i>Arizona</i> (21).....	2	5	10
	<i>Pennsylvania</i> (21).....			
1938	<i>Mississippi</i> (21).....	1	4	11
1939	<i>New Mexico</i> (21).....	2	2	13
	<i>Idaho</i> (20).....			
1940	<i>Tennessee</i> (20).....	1	1	14
1941	<i>California</i> (20).....	2	.....	15
	<i>Maryland</i> (20).....			
1942	Two ships <i>Virginia</i> class.....	2	.....	15

GREAT BRITAIN

1922-1933			17	3
1934	<i>Iron Duke</i> (20).....	2	13	
	<i>Marlborough</i> (20).....			
	<i>Emperor of India</i> (20).....			
	<i>Bombow</i> (20).....			
1935	<i>Tiger</i> (21).....	2	9	7
	<i>Queen Elizabeth</i> (20).....			
	<i>Warspite</i> (20).....			
	<i>Barham</i> (20).....			
1936	<i>Malaya</i> (20).....	1	7	8
	<i>Royal Sovereign</i> (20).....			
1937	<i>Revenge</i> (21).....	2	5	10
	<i>Resolution</i> (21).....			
1938	<i>Royal Oak</i> (22).....	1	4	11
1939	<i>Valiant</i> (23).....	2	2	13
	<i>Repulse</i> (23).....			
1940	<i>Renown</i> (24).....	1	1	14
1941	<i>Ramillies</i> (24).....	2	.....	15
	<i>Hood</i> (21).....			
1942	A (17), B (17).....	2	.....	15

JAPAN		Com- pleted	Pre- Jutland	Post- Jutland
YEARS	Scrapped			
1922-1933			8	2
1934	<i>Kongo</i> (21).....	1	7	3
1935	<i>Hiei</i> (21).....	1	5	4
	<i>Harema</i> (20).....			
1936	<i>Kirishima</i> (21).....	1	4	5
1937	<i>Fuso</i> (22).....	1	3	6
1938	<i>Yamashiro</i> (21).....	1	2	7
1938	<i>Ise</i> (22).....	1	1	8
1940	<i>Hanga</i> (22).....	1		9
1941	<i>Nagato</i> (21).....	1		9
1942	<i>Mutsu</i> (21).....	1		9

The schedule of displacement for aircraft carriers was:

	Tons
United States.....	135,000
Great Britain.....	135,000
Japan.....	81,000
France.....	60,000
Italy.....	60,000

Aircraft carriers must not exceed 27,000 tons displacement, except that two are allowed up to 33,000 tons, which two may be converted battleships that otherwise would have been scrapped. There are careful and complicated provisions limiting the guns of aircraft carriers to six inch calibre or, at most, eight inch. Other than the above battleships, aircraft carriers and troopships, no vessels of war exceeding 10,000 tons displacement may be built within the countries of the five signatory powers. Nor, may such vessels of war carry guns of more than eight inch calibre. No merchant ship may be designed to carry, in the event of war, guns of more than six inch calibre. None of the five governments may dispose of warships, whether by gift or sale, to another power. And immediate information of the private manufacture of warships for non-participating powers must be given by the signatory powers to one another. Information must also be furnished of their own construction for replacements. In the event of national security requiring a modification of the treaty, or of possible scientific and technical developments, or of war, there are provisions enabling the signatory powers to enter into further conference for the modification of the Treaty. It will be seen that the general effect of the Treaty is to prevent any further naval competition except in small warships of 10,000 tons and under. A provision of momentous importance, was Article XIX. By this Article, the United States, the British Empire and Japan undertake that "no new fortifications or naval bases shall be established" in their distant possessions of the Pacific. In simple language, the Article allows the various countries to fortify their own home coasts, that is, the shores of America, New Zealand, Australia and Japan, but forbids any further fortifications on, let us say, the Philippines or Hongkong. The strategic significance of this arrangement is far-reaching. No navy can operate in war at a greater distance than 2,000 miles from its base. Hawaii is 2,100 miles from San Francisco and is, at present, the advance base of the United States Navy. But Japan is 3,300 miles and the Philippines 5,000 miles from Hawaii, which base is thus useless in the event of hostilities in Far Eastern waters.

The naval experts of the United States thus claimed that Guam, 3,300 miles west of Hawaii and about 1,500 miles both from Japan and the Philippines, should be fortified as a naval base in advance of Hawaii. Under Article XIX, not only Guam but the Philippines remain, virtually undefended. In December 1922 Admiral Sims described the position of the United States in the Pacific as "unfortunate" and added: "Anybody can spit on the Philippines and you can't stop them. They can take the Philippines any day. Anybody in the western Pacific who wants Guam can seize it. It could be taken by the troops of Japan. To support the fleet in the Philippines would require 30,000 tons of supplies a day, including fuel oil, and that would mean about 300 or 350 ships going out and the same number coming back every day. If you didn't hold Guam on the flank of this line of communication, an enemy could cut the line."

In the *Atlantic Monthly* (April 1922), the naval argument was set out on authority by William Howard Gardiner who explains that Singapore, the British base, is 6,000 miles from Hawaii and that Hongkong is defective in facilities as a base. It is thus undeniable that Article XIX has left the Japanese fleet without a rival in the Far East.

When the year 1922 closed the Naval Treaty had been ratified by the United States, Great Britain and Japan, the Powers most intimately concerned, but not by France, whose abstention prevented ratification by Italy. However, the Italian Chamber of Deputies approved the Treaty by a vote of 266 to 33 on 7 Feb. 1923. Poincaré and Mussolini, the Prime Ministers of these countries, had indicated that they hoped for ratification at an early date. And on 7 February also, it was announced that the Treaty soon would be presented to the French Parliament with a recommendation that it be ratified. Neither France nor Italy is attempting to build beyond their schedules or indeed at all. But the omission of France to ratify means that the Treaty is not yet in force, except as a gentleman's agreement which is being respected by all the powers concerned. The battleships, scheduled for the scrap heap, are either there or going there; Great Britain has also placed many subordinate vessels out of commission and out of 9,400 naval officers, 1,835 are retired from active service.

On the other hand, the construction of unrestricted ships has aroused some comment. According to the United States Naval Intelligence Bureau, (27 June 1922) this construction was as follows: *Great Britain*.—first-line cruisers, none; destroyer leaders, 1 of 1,750 tons; first-line destroyers, 3 of 3,725 tons; first-line submarines, 4 of 5,800 tons; fleet submarines, none. *United States*.—first-line light cruisers, 10 of 75,000 tons; destroyer leaders, none; first-line destroyers, 3 of 3,645 tons; first-line submarines, 36 of 31,561 tons; fleet submarines, 3 of 6,375 tons. *Japan*.—first-line light cruisers, 15 of 81,900 tons; destroyer leaders, none; first-line destroyers, 50 of 58,500 tons; first-line submarines, 23 of 30,394 tons; and 52 of tonnage unknown to American Naval Intelligence officers; fleet submarines, none. *France*.—first-line light cruisers, 3 of 24,000 tons; destroyer

leaders, 6 of 14,400 tons; first-line destroyers, 12 of 16,800 tons; first-line submarines, 12 of 13,200 tons; fleet submarines, none. *Italy*.—first-line light cruisers, 2 of 16,000 tons; destroyer leaders, 6 of 12,270 tons; first-line destroyers, 12 of 11,680 tons; first-line submarines, 4 of 2,600 tons; fleet submarines, none.

From these figures, the activity of Japan is obvious, as is her prospective superiority in submarines and the smaller vessels of war. In his original proposals, Secretary Hughes advanced the following schedules for auxiliary vessels. Total displacement of cruisers, flotilla leaders and destroyers—United States 450,000 tons; Great Britain 450,000 tons; Japan 270,000. Total displacement of submarines—United States 90,000 tons; Great Britain 90,000 tons; Japan 54,000 tons.

These schedules were dropped but on the Naval Bill of 18 Dec. 1922, the House of Representatives requests the President to enter into negotiations with the four other naval powers with a view to "limiting the construction of all types and sizes of sub-surface and surface craft of 10,000 tons standard displacement and of aircraft."

During the Conference, Great Britain pressed for the total abolition of submarines. Her argument was that submarines cannot be used without being abused and that experience had proved them to be of little value except against merchant shipping, which by the laws of war, they had no right to sink at sight. If there were submarines at all, argued Balfour, they would break the laws of war. Abolition was thus the only plan that would be effective. The contrary argument was that submarines are a valuable and unexpensive weapon in the hands of the smaller powers. The result of the argument was embodied in a second Treaty which deals, not with the building of submarines but only with rules for their use. For "the protection of the lives of neutrals and non-combatants at sea in time of war" it is laid down, as follows: (1) A merchant vessel must be ordered to submit to visit and search to determine its character before it can be seized. A merchant vessel must not be attacked unless it refuse to submit to visit and search after warning, or to proceed as directed after seizure. A merchant vessel must not be destroyed unless the crew and passengers have been first placed in safety. (2) Belligerent submarines are not under any circumstances exempt from the universal rules above stated; and if a submarine can not capture a merchant vessel in conformity with these rules the existing law of nations requires it to desist from attack and from seizure and to permit the merchant vessel to proceed unmolested.

Article II. The signatory powers invite all other civilized powers to express their assent to the foregoing statement of established law so that there may be a clear public understanding throughout the world of the standards of conduct by which the public opinion of the world is to pass judgment upon future belligerents.

Article III. The signatory powers desiring to insure the enforcement of the humane rules of existing law declared by them with respect

to attacks upon and the seizure and destruction of merchant ships, further declare that any person in the service of any power who shall violate any of those rules, whether or not such person is under orders of a governmental superior, shall be deemed to have violated the laws of war and shall be liable to trial and punishment as if for an act of piracy and may be brought to trial before the civil or military authorities of any power within the jurisdiction of which he may be found.

Article IV. The signatory powers recognize the practical impossibility of using submarines as commerce destroyers without violating as they were violated in the recent war of 1914-18, the requirements universally accepted by civilized nations for the protection of the lives of neutrals and non-combatants, and to the end that the prohibition of the use of submarines as commerce destroyers shall be universally accepted as a part of the law of nations they now accept that prohibition as henceforth binding as between themselves and they invite all other nations to adhere thereto.

By Article V, the use of poison gas is prohibited in these terms: "The use in war of asphyxiating, poisonous, or other gases, and all analogous liquids, materials, or devices, having been justly condemned by the general opinion of the civilized world and a prohibition of such use having been declared in treaties to which a majority of the civilized powers are parties. The signatory powers to the end that this prohibition shall be universally accepted as a part of international law binding alike the conscience and practice of nations, declare their assent to such prohibition, agree to be bound thereby as between themselves and invite all other civilized nations to adhere thereto."

While a measure of disarmament at sea was under consideration by Five Powers, there were Nine Powers discussing a settlement in the Far East. The first subject on the table was the Anglo-Japanese Alliance which was ripe, either for renewal or for termination. In India, there was unrest and Australia was acutely conscious of what might be her position if Japan, having assisted in the war, were to be now antagonized. Out of this situation, there was developed the Four Power Treaty, signed by the United States, the British Empire, France and Japan. The object of this Treaty was "the preservation of the general peace and the maintenance of their rights in relation to their insular possessions and insular dominions in the regions of the Pacific Coast." The Treaty is to run for ten years and is renewable. It was to be "ratified as soon as possible in accordance with the constitutional methods of the high contracting parties." The determining clauses of the Treaty are:

Article I. The high contracting parties agree as between themselves to respect their rights in relation to their insular possessions and insular dominions in the region of the Pacific Ocean.

If there should develop between any of the high contracting parties a controversy arising out of any Pacific question and involving their said rights which is not satisfactorily settled by diplomacy and is likely to affect the harmonious accord now happily subsisting between them,

they shall invite the other high contracting parties to a joint conference to which the whole subject will be referred for consideration and adjustment.

Article II. If the said rights are threatened by the aggressive action of any other power the high contracting parties shall communicate with one another fully and frankly in order to arrive at an understanding as to the most efficient measures to be taken, jointly or separately, to meet the exigencies of the particular situation.

Briefly, these clauses pledge the parties to respect one another's possessions, to confer in case of a mutual difference and to consult in case of a difference with some outside power. Japan thus promises to refrain from aggression in the Philippines, Australia, New Zealand and India, while in return, she secures, not indeed an alliance with Western Powers but an association on equal terms. To the Four Power Treaty, China was not a Party.

To the Treaty, there were two reservations. By the first of these, signed by all Four Powers on 6 Feb. 1922 the phrase "insular possessions and insular dominions," was understood not to mean Japan proper—a country which happens to consist of islands. By the second, passed in the Senate on 27 March 1922, "the United States understands that under the statement in the preamble or under the terms of this treaty there is no commitment to armed force, no alliance, no obligation to join in any defence."

The position of China at the Conference was difficult. The Delegates Plenipotentiary represented whatever Government there was in Peking. But it was not easy to contend that this Government represented much of China. The South was in open revolt. Under military dictators, the provinces were often in civil conflict. The Treasury was empty and on the eve of the Conference, China defaulted on a loan, allowed her by a bank in Chicago. The plea of the Chinese delegates was, in general terms, that their country only deposed the Manchu dynasty in 1911, that she was slowly but surely recovering from revolution, that her recovery was retarded by the strangulation of treaties imposed on her by foreign powers and especially by the international limit on her customs to 3½ per cent at the values then ruling her imports. The hostility of the Chinese to the Japanese was obvious and was expressed in the country itself by a determined, commercial boycott. On the other hand, it was clear that China's troubles had been caused largely by her own fault. The concessions of which she complained often represented a corrupt bargain, by which her officials had enriched themselves.

Two Treaties were signed, dealing respectively with the open door in China and with her customs.

By the First Chinese Treaty, Articles I and II, the Powers agree: (1) To respect the sovereignty, the independence, and the territorial and administrative integrity of China; (2) To provide the fullest and most unembarrassed opportunity to China to develop and maintain for herself an effective and stable Government; (3) To use their influence for the purpose of effectually establishing and maintaining the principle of equal opportunity for the commerce

and industry of all nations throughout the territory of China; (4) To refrain from taking advantage of conditions in China in order to seek special rights or privileges which would abridge the rights of subjects or citizens of friendly States, and from countenancing action inimical to the security of such States; Article II. The contracting powers agree not to enter into any treaty, agreement, arrangement or understanding, either with one another or, individually or collectively, with any power or powers, which would infringe or impair the principles stated in Article I.

By Article III, "the open door" is defined as "equality of opportunity in China for trade and industry of all nations," which principle is held to debar the signatories from seeking—(a) Any arrangement which might purport to establish in favor of their interests any general superiority of rights with respect to commercial or economic development in any designated region of China; (b) Any such monopoly or preference as would deprive the nationals of any power of the right of undertaking any legitimate trade or industry in China, or of participating with the Chinese Government, or with any local authority, in any category of public enterprise, or which by reason of its scope, duration, or geographical extent is calculated to frustrate the practical application of the principle of equal opportunity. It is understood that the foregoing stipulations of this article are not to be construed as to prohibit the acquisition of such properties or rights as may be necessary to the conduct of a particular commercial, industrial, or financial undertaking or to the encouragement of invention and research.

China undertakes to be guided by these principles in dealing with applications for economic rights from foreign nations, "whether parties to the present treaty or not." Article IV pledges the powers not to support spheres of influence, while by Article V, China promises not to permit discrimination on her railways, whether in charges or facilities. By Article VI, China is assured of the status of a neutral in time of war. Article VII provides for mutual discussion by the signatory Powers of any point arising under the Treaty. Article VIII invites non-signatory Powers to adhere to the Treaty. By resolution, a Board of Reference was set up, the duty of which is to deal with any details arising out of the Open Door Treaty. Secretary Hughes moved a resolution by which concessions already granted by China were to be referred to this Board for advice, but France objected to any such retroactive measure, her attitude being that future concessions alone must be supervised. A Resolution in favor of unified Chinese railways under Chinese control was carried. A difficult case was the Chinese Eastern Railway, held and operated under the Russo-Asiatic Bank, pending normal conditions in Russia herself. This line is a final link in the Trans-Siberian Railway. It runs eastward from Manchouli on the Russian frontier through Manchuria to Suifenhoo, also on the Russian frontier and thence connects with Vladivostok. China objected to the continued surveillance over the line exercised by the Inter-Allied Technical Commission and the Conference passed a Reso-

lution calling for a more careful selection of staff and prevention of waste, with the reserved right to insist upon China performing her obligations to the stockholders.

The controversy over Shantung was discussed and settled outside the doors of the Conference by China and Japan in direct negotiation, Secretary Hughes and Balfour assisting as friends of both parties. On 4 Feb. 1922, a treaty was signed by the two Powers whereby, within six months, Japan agrees to restore to China the former leased German territory of Kiao-Chau, with archives and public property, excepting only premises for a consulate and Japanese schools, shrines and cemeteries. Japanese troops, including gendarmes along the Tsing-tao-Tsinanfu Railway are to be withdrawn and replaced by Chinese police and military, and the Custom House at Tsing-tao is included in the Chinese Maritime Customs. The Railway itself is bought by China from Japan for 53,406,141 gold marks, with additional sums for improvements. The mines are leased to a chartered company in which China and Japan share the capital. Japan surrenders her exclusive settlement at Tsing-tao which is thrown open to the trade of all nations. The Japanese salt industry in Kiao-Chau Bay is included, after compensation, in the Chinese Salt Monopoly Cables between Tsing-tao and Chefoo and between Tsing-tao and Shanghai. Japanese wireless stations at Tsing-tao and Tsinanfu are taken over by China at compensation. Japan renounces all preferential rights regarding persons, capital and material which were granted to Germany in her Treaty with China of 6 March 1898. China is to control the telephones and other facilities and is to appoint the staff of the railway.

In December 1922, the evacuation of Shantung was virtually complete and the Chinese flag was again flown at Tsing-tao, for the first time since 1898. China is to pay Japan the following sums: For Public Improvements 20,000,000 yen; For Salt Industry 8,000,000 yen; For Railways 55,000,000 yen; Total 73,000,000 yen.

This represents about \$35,000,000. The payment is made in Chinese notes. The Chinese Customs Treaty negotiated at Washington contains 10 clauses. It deals first with the tariff established by International Commission at Shanghai on 19 Dec. 1918. By this tariff an ad valorem duty of 5 per cent is paid on goods entering China. The Chinese argued that, at present prices, the duty is now only 3½ per cent and a Revision Commission was appointed by the treaty to proceed to Shanghai and there raise the tariff to a real 5 per cent of the values imported.

In previous treaties, signed by China in 1902 and 1903, China had promised to abolish *likin* and institute other reforms, in return for which she was to be permitted to charge a surtax of 2½ per cent on imports. By Article II of the Washington Treaty, a conference was appointed, to meet within three months, and put through the above conditions. This conference may authorize the additional 2½ per cent surtax. China has complained that her uniform tariff is unfair because it treats all commodities alike, whether they be necessities of life or only lux-

uries. Article III of the treaty allows China to levy on luxuries a surtax of 5 per cent, instead of 2½ per cent.

On 23 and 24 Jan. 1922, the presence of Japan in Siberia was a subject of two pronouncements by Ambassador Shidehara and Secretary Hughes. The Japanese spokesman explained that, in 1918, Japan, with the United States, entered Siberia, in order to help the Czechoslovakian troops withdrawing from Russia. Japan had since supported Kolchak against the Soviet government but was now ready to withdraw, except from the island of Saghalin which was held pending satisfaction by some future Russian government for the massacre of 700 Japanese at Nikolaievsk in 1920. This statement led to a frank rejoinder in which Secretary Hughes regretted the intention of Japan to occupy Saghalin. After prolonged negotiations with the Republic of Chita, Japan withdrew from Siberia, including Vladivostok, about the month of September, 1922. The Chita Republic was immediately incorporated with the Soviet government at Moscow. Japan's occupation had been expensive, costing her about \$175,000,000.

A final if indirect result of the Washington Conference was an agreement between the United States and Japan over the Pacific Islands and especially over Yap. By the Treaty of Versailles, former German Islands in the Pacific, north of the Equator, are held by Japan under mandate. The Senate declined to ratify the treaty and the said mandate, therefore, was administered by Japan without the approval of the United States. The island or islands of Yap are the most westerly of the Caroline group and are important as links for cables. On 13 Dec. 1921, there was published the agreement, Clause I of which states: It is agreed that the United States shall have free access to the island of Yap on the footing of entire equality with Japan or any other nation in all that relates to the landing and operation of the existing Yap-Guam cable or of any cable which may hereafter be laid by the United States or its nationals.

By Clause II, the United States reserves the right to establish a radio station on Yap, but agrees to suspend this right as long as Japan, by her station, maintains effective radio co-operation. Other clauses safeguard rights of residence, etc.

Japan's mandate over her Pacific islands is approved, subject to observance of the conditions prohibiting the slave trade, a traffic in arms and intoxicating liquor. Missionary enterprise is to be freely permitted. On 1 March 1922, the U. S. Senate ratified the so-called Yap Treaty by 67 votes to 22.

Summing up the results of the Washington Conference, we may say that it cleared the air in the Far East of much inflammatory poison, greatly improving relations between the United States and Japan. It stopped the naval race between the United States and Japan and furnished Great Britain with a convenient escape both from her Anglo-Japanese Alliance and her traditional, but now impossible, command of the ocean. It restored Shantung to China and Siberia to Russia. Its influence over Japan

has been liberal and beneficial and is reflected in some reduction of Japan's Army. To Europe, the Conference did not mean very much, owing to the veto of France on limitation of armaments on land. A resolution was indeed passed, appealing to China to disband the million or more troops, maintained by her provincial dictators for their own civil wars, but that was all. There is, too, a certain scepticism over the prohibition of poison gas. "You bet your life we'll use gas," declared Admiral Sims in June 1922, adding that the idea of gas being inhuman "was caused by Allied propaganda when the Germans were using it." In the *Atlantic Monthly* for that month, W. Lee Lewis presents the case for poison gas in terms which severely discount the prohibition.

In certain quarters, there has been a desire for a second Washington Conference, to deal with European Debts, German Reparations and Disarmament on Land. A resolution, tending that way, was actually advanced by Senator Borah, as the year 1922 drew to a close, but was not pressed. Negotiations between Russia and Poland for a reduction of their two armies were also undertaken during the autumn but failed. Disarmament on land is thus a problem still to be solved.

PHILIP WHITWELL WILSON.

WASHINGTON AND JEFFERSON COLLEGE, an interdenominational educational institution for men (co-educational in the Extension Department), founded in 1787 and located at Washington, Pa. In 1922-23 it had a faculty of 31 members, 468 students, and property valued at \$599,304.89. Income figures not given. Simon S. Baker, A.M., is president.

WASHINGTON AND LEE UNIVERSITY, a non-sectarian educational institution for men, founded in 1749 and located at Lexington, Va. In 1922-23 it had a faculty of 55 members, 770 students, property valued at approximately \$2,250,000, and an approximate income of \$240,000. Henry Louis Smith, LL.D., is president.

WASHINGTON MISSIONARY COLLEGE, a co-educational institution under the auspices of the Seventh Day Adventists, founded in 1904 and located at Takoma Park, D. C. In 1922-23 it had a faculty of 25 members, 325 students, property valued at \$200,000, and an income of \$109,000. Harvey A. Morrison, A.M., is president.

WASHINGTON, State College of, a State co-educational institution, founded in 1890 and located at Pullman, Wash. In 1922-23 it had a faculty of 239 members, including administrative officers, 2,113 students, property valued at \$2,138,682.30, and an income of \$1,068,576.25. Ernest O. Holland, Ph.D., is president.

WASHINGTON UNIVERSITY, a non-sectarian co-educational institution founded in 1853 and located at Saint Louis, Mo. In 1922-23 it had a faculty of 396 members, 5,053 students, property valued at \$5,125,104.53 and an income of \$721,450.05. Chancellor, Frederic A. Hall, LL.D.

WASHINGTON, University of, a State co-educational institution, founded in 1861 and

located at Seattle, Wash. In 1922-23 it had a faculty of 260 members, 7,000 students, and property valued at \$11,981,297.14. Its income in 1921-22 was \$2,280,243. Henry Suzzallo, Ph.D., LL.D., is president.

WATERMELON ACREAGE. According to the estimate of the United States Department of Agriculture, the commercial area planted to watermelons in 1922 in the nine leading producing States — Alabama, Arizona, California (southern district), Florida, Georgia, New Mexico, North Carolina, South Carolina and Texas — totaled 161,000 acres, compared with a harvested area in 1921 of 109,800 acres. This represents an increase over the preceding year of 47 per cent. Georgia, in 1922, as in 1921, led in acreage with an estimated planting of 57,800 acres as against 38,000 acres harvested in 1921. Texas came second, with a planting of 37,400 acres, compared with 29,000 acres harvested the preceding year. Florida, practically doubling its acreage, planted 35,400 acres in 1922, against 18,700 acres planted in 1921. Alabama's planting totaled 11,700 acres in 1922, against 7,700 in 1921. South Carolina planted 8,900 acres in 1922, compared with 6,600 acres in 1921. California (southern district) planted 4,700 acres in 1922, against 3,900 acres in 1921. North Carolina was the only State among those named to show a decrease in its watermelon acreage, its planting in 1922 being 3,500 acres, compared with 4,300 acres in 1921. Arizona's estimated planting of 1,200 acres in 1922 exactly equaled its harvested area of the year before, and, likewise, New Mexico's planting of 400 acres in 1922 just equaled its planting of 1921.

WATER METERS, Manufacture of. See GAS MACHINES AND GAS AND WATER METERS, MANUFACTURE OF.

WATER POWER. See HYDROELECTRIC DEVELOPMENT.

WATERPROOFING, New Method of. A method of waterproofing cloth by means of the direct application of fresh latex, or sap, is practiced in the Department of Beni, Bolivia. Cloth is coated with latex, or milk of the rubber tree — the latex must be less than 24 hours old — and then passed over the smoke of an ordinary wood fire. Good waterproof ponchos, bags, and pouches are made by this method and are giving satisfactory service.

WATER SUPPLY. During the past few years many notable increases and improvements in municipal water supplies have been made. Among the recent improvements deserving especial mention is that to the water supply of Jerusalem. Previous to British occupancy of Palestine and Zionist activity therein, Jerusalem had but one small fountain so that in recent times the people had to depend almost entirely upon cisterns. The military administration under General Allenby re-discovered strong springs in the Judean Hills about seven miles south of the city, built a reservoir on a neighboring hill, and pumped the water from the springs into it. From this reservoir the water flows to Jerusalem by gravity. But this supply proved inadequate and, as a result, early in 1923 machinery was put in motion to bring the waters of the Pools of Solomon to the Holy City. These pools, believed

actually to date from the Herodian period, have been out of repair for several hundred years. On 7 April 1923 it was announced in an Associated Press dispatch published in the *New York Times* that two of the pools had been cleaned and recemented and were then ready to increase the water supply of Jerusalem. With the completion of the third pool, the capacity will be 40,000,000 gallons, enough to last the city for three months. The source of these pools is three miles further south and for one half the distance the water is brought through a tunnel driven through solid rock. The following gives interesting information in regard to augmented and improved water supplies of some cities in the United States and Canada. In 1922 the Joint Board of Boston and Worcester, as a means of securing an additional water supply for these cities, recommended the diversion of Ware River into Wachusett reservoir. Later the waters of Swift and Miller rivers are to be taken. The flow of Ware River will increase the daily supply 22 million gallons, and the flow of the three rivers, 202 million gallons. A 410 billion gallon reservoir is to store the flood waters of the Swift and Miller rivers. Filter plants are also to be constructed.

New York City is to augment its water supply from the Catskill watershed by diverting the flow of Schoharie Creek from its natural channel in a horse-shoe shaped tunnel 18.1 miles long 10½ feet wide and 11½ feet high through Shandaken range of the Catskill Mountains into Esopus Creek. Schoharie Creek is being dammed at Gilboa and the Schoharie reservoir is being constructed, 5.8 miles long, 0.7 mile wide, and it is to have an average depth of 57 feet. The flow therefrom through the tunnel, down Esopus Creek into Ashokan reservoir will be at the rate of 250,000,000 to 600,000,000 gallons daily. This will insure a daily supply to New York of 500,000,000 gallons from that source. See TUNNELS.

Portland, Me., receives its water supply from Sebago Lake, 16 miles distant. The water flows by gravity to settling basins, and thereafter is treated by hypochlorite and thus rid of its pollution. As it enters the distributing mains, it is treated with liquid chlorine as a further precaution.

Burlington, Vt., pumps its supply from Lake Champlain to its filter plant and thereafter to its high and low service reservoirs.

Springfield, Mass., takes its supply from the Westfield Little River system. It is filtered at the West Parish sand filter and the quality is wholesome.

Albany, N. Y., pumps most of its supply from the Hudson River. The raw water passes into a sedimentation basin 600 feet long and 383 feet wide and 9 feet deep, where the reduction in bacterial count on gelatine from settling was 43.8 per cent, and from coagulation was 66.6 per cent. The water then passes to the 16 primary filters with sand beds 30 inches deep, resting on 18 inches of graded gravel over the underdrains. The effluent then passes into slow sand filters. Either liquid chlorine or hypochlorite of lime may then be applied. The Agar test showed a bacterial reduction in 1920 from 1,400 to 5 bacteria per cubic centimeter, and the gelatine tests showed a reduction from 25,000 to 57 bacteria per cubic centimeter. The other and early

sources of the city supply are not drawn upon except in cases of emergency.

Binghamton, N. Y., takes its water from the Susquehanna River, the water being purified by means of chemical precipitation (alum) and rapid sand filtration.

Providence, R. I., pumps its water supply from the Pawtuxet River to filter beds. After filtration it is elevated to Sockanosset reservoir, whence it flows partly to Hope reservoir and thence, in part, is pumped to Fruit Hill reservoir. An additional supply is being sought further up the Pawtuxet, where another filter plant will be installed and the Scituate reservoir will be constructed. An aqueduct 7 miles long will conduct the water to the distributing mains. There are several large reservoirs in the adjacent towns. All such supplies are subjected to sand filtration and other purification processes.

Hartford, Conn., takes its supply from Farmington River and its tributaries. It is filtered, chlorinated and frequently tested. At one time vegetable organisms, termed *pectinatella magnifica*, were found attached to the gates of the reservoir.

Philadelphia, Pa., is seeking additional sources of supply, but in May 1922 it had reached no conclusion. Its present supply from the Delaware and Schuylkill Rivers is subjected yearly to increasing pollution. The raw water of the Schuylkill is lifted to settling basins, then passes to preliminary filters and thereafter to slow or rapid sand filters. The raw water of the Delaware is pumped to the Torresdale purification plant, consisting of settling basins, preliminary filters and slow sand filters. Filtration in 1921 effected a reduction on gelatine at 20° for 48 hours from 44,300 bacteria per cubic centimeter of the raw Delaware water and from 67,900 bacteria per cubic centimeter of the raw Schuylkill water in both cases to 3, 4 or 5 bacteria per cubic centimeter.

Harrisburg, Pa., desiring to increase its supply, is about to install a new intake in the Susquehanna River, whence it derives its entire supply; also six new filters and other new purifying equipment.

Wilmington, Del., pumps its supply from Brandywine Creek. Its works include settling and coagulating basins with baffles (where sulphate of alumina is applied), and 6 rapid sand filters. The effluent is then chlorinated.

Baltimore, Md., recently tremendously increased its water supply by raising the height of the Loch Raven dam across the Gunpowder River and is to construct a dam across Falls Run, a tributary of the Patapsco River, to obtain an additional 100½ million gallons. It now claims to have a supply sufficient to meet its needs for the next 50 years. The water is thoroughly renovated.

Charleston, W. Va., obtains its supply from Elk River. It is both filtered and chlorinated.

Chattanooga, Tenn., pumps its supply from the Tennessee River. It is settled, filtered and sterilized.

St. Augustine, Fla., is supplied entirely from artesian wells. The quality is good.

Memphis, Tenn., at present is supplied from artesian wells. Such water contains 90 to 130 parts per million gallons of carbonic acid and some iron. Consulting engineers recommend the

extension of the wells, but eventually in all probability it will take its supply from the Mississippi River, as St. Louis is doing.

In the Compton Hill basin at St. Louis were found *diatoms*, *synedra*, *cyclops*, *daphnia*, *sida*, *simocephalus*, *moina* and *ergasilus* forms of crustacea. From experiments it was thought that snails in the water increase the bacteria, but the use of one-tenth part of copper sulphate per million gallons reduced the bacteria count to 100 per cubic centimeter.

Cincinnati, O., in 1921 used in purifying its supply from the Ohio River 1,658 tons of sulphate of iron, 895 tons of quicklime and 8.9 tons of liquid chlorine.

Indianapolis, Ind., obtains its supply from White River and from wells. It is filtered and sterilized.

Detroit, Mich., takes its supply from Detroit River and is now constructing a thoroughly modern purification plant.

Cleveland, O., takes its supply from Lake Erie. It is settled, filtered and sterilized.

Buffalo takes its supply from Lake Erie through a long tunnel. That city is about to construct a large purification plant. Its present supply is chlorinated.

Ann Arbor, Mich., pumps its supply from artesian wells. When such water is exposed to contamination from inflowing surface water, then the supply is chlorinated.

Springfield, Ill., obtains its supply from deeply driven wells and infiltration galleries in the valley of the Sangamon River, which intercept and collect the underground flow.

Chicago, Ill., pumps its supply from Lake Michigan. The water is chlorinated, which reduces the colon and typhoid bacilli by the oxidizing action of the chlorine, though the spores of *bacillus subtilis* require larger doses than do the common intestinal forms of organisms. If more than 5 colon bacilli are found in each 5 of the 10 cubic centimeter portions of water the dose of chlorine is increased.

Milwaukee, Wis., pumps its water from Lake Michigan and chlorinates it, but that has not reduced the bacteria to the minimum of safety, and that city is about to construct a filter plant to renovate its supply, which is exposed to sudden variations of contamination from sewage in lake storms, as are other lake cities.

Saint Paul, Minn., obtains two-thirds of its supply from small lakes north of the city and the other third from wells. It is to pump an additional supply from the Mississippi five miles above Minneapolis intake. That will pass through a mechanical filter plant of 42 million gallons capacity and then into low and high service reservoirs.

Omaha, Neb., pumps its supply from Missouri River. The water is settled and filtered.

Lincoln, Neb., draws its water from deep wells and treats it with chlorine gas against possible contamination from surface pollution.

Kansas City, Kan., subjects its supply to sedimentation, assisted by coagulation with aluminum sulphate and lime when necessary, and then to rapid sand filtration; thereafter to sterilization with liquid chlorine.

Little Rock, Ark., pumps its water from four wells in the valley of the Arkansas River into a settling basin, from which it flows to filters of

different types and then to the distributing system.

Denver, Col., obtains its supply from Lake Cheeseman by impounding the waters of the South Fork of the South Platte River and Goose Creek, which lake is 50 miles distant. The water is purified and sterilized.

Salt Lake City, Utah, takes its supply from three canyons, viz.: City Creek, Parleys and Big Cotton in the Wasatch Mountains, which watersheds have an elevation of 1,000 to 5,000 feet above the city, and are supplied mainly from winter snows, whose waters require no sedimentation or filtration.

Spokane, Wash., pumps its entire supply from three wells connected by tunnels which intercept the vast subterranean flow, and whose daily yield is 80,000,000 gallons. The water is entirely free of colon or typhoid or other pathogenic bacteria.

Seattle, Wash., obtains its supply from the watershed of the Cascade Mountains, 28 miles distant, through two pipe lines, which deliver the water by gravity into reservoirs. The water is as soft and pure as distilled water.

Portland, Ore., obtains its supply, through two large pipe lines, from the mountain stream known as Bull Run, fed from snows in the Cascade Mountains, 24 miles distant. The water is soft and remarkably pure.

San Francisco, Cal., has several peninsular and other sources of water supply. In addition to these, in 1921 it commenced its Hetch-Hetchy development and the Eleanor Lake project, which together take the flow of Eleanor and Cherry Creeks and Tuolumne River in the Yosemite National Park, 156 miles distant. Eleanor Lake reservoir will ultimately have a capacity of 50 or more billion gallons, and its crest elevation is 4,661 feet above sea level. The water will be conducted through a succession of tunnels, aqueducts and flumes, 87 miles long. The first of such tunnels is 18.3 miles long with an inside measurement of 10 $\frac{1}{4}$ feet. San Joaquin Valley is crossed by steel pressure pipes, and the coast range is pierced by a pressure tunnel 31.5 miles long from Tesla portal to Irving Gate House, 10 miles east of San Francisco Bay, which is crossed by three pipes leading into an aqueduct terminating in the Amazon reservoir of 300,000,000 gallons capacity. The supply from that source will be 200,000,000 gallons daily, which will be additional to its present Peninsular, Alameda Creek and Spring Valley supplies. The capacity of the Hetch-Hetchy aqueduct is 400,000,000 gallons daily, and it will supply other cities and towns beside San Francisco and develop 200,000 hydro-electric horse-power for heating, lighting, and for manufacturing purposes.

Los Angeles, Cal., obtains its water supply from the melting snows of Mount Whitney flowing into Owen River 240 miles distant, and from the Upper Fernando Basin draining into Los Angeles River, and from Crystal Springs and from numerous wells. At the Buena Vista station water is pumped into reservoirs, as it is at the Garvanza, Edendale, Wilmington and Mt. Washington stations. At such other stations as Slauson Avenue, Figueroa, Headworks and Las Palmas it is pumped to distributing mains. The waterworks include aqueducts, regulating tanks,

trunk line mains and several storage and high service reservoirs, including Haiwee storage reservoir, fed from the waters of Owens River, from which the waters are conducted into Los Angeles as described in the article on WATER SUPPLY in 'The Americana,' Vol. 29. The water is treated to arrest algal growths in the reservoirs, and the supply is chlorinated when necessary.

Winnipeg, Canada, formerly obtained its supply from the Assiniboine River, but it now receives the waters of Shoal Lake, 95 miles distant, by gravity, through an aqueduct of cut and cover section 85 miles long, 77.5 miles of which is concrete. There are several river siphons aggregating 7.1 miles in length and concrete pressure pipes 9.4 miles long and a tunnel under Red River 0.2 mile long. A pumping station lifts the water into high service reservoirs.

Regina, Canada, obtains its supply from springs and 50 or more wells, whose yield of pure sparkling water for seven months was 784 million imperial gallons.

Vancouver, Canada, receives its supply from Seymour and Capilano Creeks. Its only method of purification is passing the water through settling tanks, where the sand, silt and fine matters are deposited, and through screens, which remove the pine needles and other floating matter.

The foregoing items are sufficient to show the increasing public interest in America in municipal water supplies and their purification for potable purposes.

HENRY WAYLAND HILL,

Author of the Article "Water Supply" in 'The Americana,' Vol. 29, and President of New York State Waterways Association.

WATSON, Thomas E., American public official: b. Columbia County, Ga., 5 Sept. 1856; d. Washington, D. C., 26 Sept. 1922. He studied for two years in Mercer College, for some time taught school and later studied law. He was admitted to the bar in 1875, and practiced in Thomson, Ga. He was a member of the Georgia House of Representatives, 1882-83, and Democratic elector-at-large in 1888. From 1891-93 he served as a member of the 52nd Congress, as a Populist, and at the elections in 1892 and 1894 he was a candidate and, according to 'Who's Who in America,' claimed election (on honest count), but his opponent was given the certificate. While a member of the United States House of Representatives, he secured the first appropriation ever made by Congress for rural free delivery of mails. In 1895 he resumed for a while the practice of law. He was nominated for Vice-President at the St. Louis Populist convention, in 1896, at which time William Jennings Bryan was endorsed for President. In 1904 he was nominated for President by the People's Party, for the revival of which he conducted a vigorous campaign. He was engaged for some time in conducting a Populist paper at Atlanta. From 1921 until the time of his death he served as United States Senator from Georgia. "Tom" Watson's career was stormy and spectacular. He championed more than one cause in which he fought against an overwhelming numerical majority or a withering public sentiment. He was anti-Wilson, anti-war measures (including

conscription), anti-League of Nations, and anti-soldier bonus. He began publication of *Tom Watson's Magazine* in New York, 1905; published *Watson's Jeffersonian Magazine* and *The Weekly Jeffersonian* after 1906 (on account of his campaign, in 1917, against conscription, the United States mails were closed to these publications), and at the time of his death was publisher of *The Sentinel*. His books include: 'The Story of France' (1898); 'Life of Thomas Jefferson' (1900); 'Life of Napoleon' (1902); 'Bethany, a Study and Story of the Old South' (1904); 'Life and Times of Andrew Jackson' (1907); 'Handbook of Politics and Economics' (1908); 'Life and Speeches of Thomas E. Watson' (1908); 'The Methods of Foreign Missions Exposed' (1909); 'Socialists and Socialism' (1909); 'The Roman Catholic Hierarchy' (1910). For the publication of three of the chapters in the last named work, he was thrice indicted and twice tried in the United States Court, but was acquitted each time.

WAYNESBURG COLLEGE, a Presbyterian co-educational institution, founded in 1850 and located at Waynesburg, Pa. In 1922-23 it had a faculty of 10 members, 381 students, property valued at \$400,000, and an income of \$37,436.18. Paul R. Stewart is president.

WEATHER BUREAU. See METEOROLOGY.

WEEKS, John Wingate. United States Secretary of War: b. Lancaster, N. H., 11 April 1860. He was graduated from the United States Naval Academy in 1881, and served as a midshipman in the United States Navy until 1883. From 1886-88 he was assistant land commissioner of the Florida Southern Railroad. He then engaged in the banking business and was a member of the firm of Hornblower and Weeks from 1888-1912. He served as alderman in Newton, Mass., from 1900-03; was mayor of Newton, 1903-04; was chairman of the Massachusetts Republican State Convention in 1905, and served as a member of the lower house of Congress from 1905-13, representing the 12th Massachusetts District. On 14 Jan. 1913 he was elected to the United States Senate, and served until 1919. Since 4 March 1921 he has been Secretary of War in President Harding's Cabinet. In 1916, Mr. Weeks was a candidate for the Republican nomination for President and in the National Convention of his party, held at Chicago, received 105 votes. From 1890-98 Mr. Weeks commanded a division of the Massachusetts Naval Brigade with the rank of captain and in 1898-99 commanded the second division of the United States auxiliary naval force on the Atlantic coast. He was a member of the Military Advisory Board, of Massachusetts and Military Board of Examiners, 1894-1900, and a member of the board of visitors of the United States Naval Academy in 1896. He is a member of the Society of the Cincinnati; the Military Order of Foreign Wars; Society of the War of 1812; the Naval and Military Order of the Spanish-American War. He is a member also of various clubs, including the Metropolitan; Chevy Chase and Army and Navy of Washington.

WEEKS LAW. See FOREST SERVICE, UNITED STATES.

WEEVILS, Alfalfa, Bean, Cowpea, Cotton Boll, Fly, Potato, Sweet Potato, Tomato. See ENTOMOLOGY, UNITED STATES, BUREAU OF.

WELLESLEY COLLEGE, a non-sectarian educational institution for women, founded in 1875 and located at Wellesley, Mass. In 1922-23 it had a faculty (administrative officers and instructing staff) of 199 members, and a student enrollment of 1,533. The institution's property is valued at \$4,955,095.93, and its income for the current year was \$783,307.94. Ellen Fitz Pendleton, Litt.D., LL.D., is president.

WELLS COLLEGE, a non-sectarian educational institution for women, founded in 1868 and located at Aurora, N. Y. In 1922-23 it had a faculty of 38 members, 219 students, property valued at \$642,542.97 and an income from invested funds of \$38,000. Kerr Duncan Macmillan, S.T.D., is president.

WENDELL, George Vincent, American physicist: b. Plainfield, N. J., 16 Aug. 1871; d. New York City, 15 March 1922. He was graduated from the Massachusetts Institute of Technology in 1892 with the degree of S.B. and took the degrees of A.M. and Ph.D. at the University of Leipzig, 1898. In 1898-99 he studied at the University of Berlin. From 1892-93 he was assistant in physics at the Massachusetts Institute of Technology; instructor from 1893-1901; assistant professor 1901-04 and associate professor 1904-07. From 1907-10 he was professor of physics and head of the department at Stevens Institute of Technology; from 1910 until his death, professor of physics at Columbia University. He established the department of physics at Simmons College, Boston, in 1902 and at Boston University in 1906.

WENDELL, James Augustus, American public official: b. Fort Plain, Montgomery County, N. Y., 1 Jan. 1869; d. Albany, N. Y., 10 May 1922. After being graduated from the Clinton Liberal Institute at Fort Plain, he studied law for a brief period and then accepted a position as clerk in the Fort Plain National Bank. In May 1894, through a competitive examination, he was appointed to a clerkship in the State Comptroller's office of New York and from that time until his death never severed his connection with that office. He served under 12 different comptrollers, was Deputy Comptroller for 10 years, and in November 1920 was elected Comptroller, defeating Charles W. Berry of Brooklyn by a majority of 588,884 votes.

WESLEYAN COLLEGE, an educational institution for women, under the auspices of the Methodist-Episcopal Church, South, founded in 1836 and located at Macon, Ga. In 1922-23 it had a faculty of 42 members, 547 students, and property, consisting of real estate and equipment, valued at approximately \$700,000. Income figures were not available. William Fletcher Quillian, A.B., D.D., is president.

WESLEYAN UNIVERSITY, a non-sectarian educational institution for men, founded in 1832 and located at Middletown, Conn. In 1922-23 it had a faculty of 52 members, 535 students, property valued at \$5,000,000 and an income of \$490,000. William Arnold Shanklin, LL.D., is president.

WEST AUSTRALIA. See AUSTRALIA.

WEST POINT ACADEMY. See UNITED STATES MILITARY ACADEMY.

WEST VIRGINIA, one of the South Atlantic States, set off during the Civil War from the original State of Virginia. It is bounded north by Ohio and Pennsylvania, east by Pennsylvania, Maryland and Virginia, south by Virginia and Kentucky, and west by Kentucky and Ohio. It is a mountainous State having an area of 24,170 square miles and in 1920 a population of 1,463,701. It ranks 40th in order of size and 27th in order of population. Of the population in 1920, 1,377,235 were whites, 86,345 negroes, 114 Asiatics and 7 Indians. The foreign-born numbered 61,906 and included 14,147 Italians, 3,798 Germans, 3,433 English and 1,459 Irish. The rural population was 74.8 per cent of the total in 1920. The chief cities, with their populations in 1920, are: Wheeling, 56,208; Huntington, 50,177; Charleston, the capital, 39,608; Parkersburg, 20,050; Fairmont, 17,851; Clarksburg, 27,869; Bluefields, 15,282; Martinsburg, 12,515; Morgantown, 12,127; Moundsville, 10,669; Grafton, 8,517; Williamson, 6,819; Princeton, 6,224; Elkins, 6,788 and Keyser, 6,003.

Religion.—The principal Christian denominations have a combined membership of 427,865, of whom 154,519 are Methodists, 78,679 Baptists, 60,337 Roman Catholics, 27,349 Presbyterians, 6,831 Episcopalians, 1,015 members of the Reformed Church and 316 Congregationalists.

Education.—The percentage of illiteracy in 1920 was 6.4, of native whites, 4.6, of negroes, 15.3, and of foreign-born 24. There are 12,885 teachers in the public schools and 370,000 enrolled pupils. Primary education is free for all children from the ages of 6 to 21 and attendance is compulsory for 20 weeks yearly for all children between the ages of 8 and 14. There are 172 high schools with 1,129 teachers and 18,502 pupils, and 6 normal schools for the training of elementary teachers with 123 professors and 2,262 students. For higher education there are West Virginia University, Bethany College and West Virginia Wesleyan College.

Finances.—On 1 July 1921 the State treasury had on hand \$2,761,537.42. Receipts during the ensuing year amounted to \$51,560,618.23. Disbursements during the same period amounted to \$37,145,211.77, leaving a balance on hand 1 July 1922 amounting to \$17,180,943.88. The legislative appropriation for the fiscal year 1923 totaled \$9,933,700. The bonded debt of the State totals \$15,000,000. In addition to which there is the so-called Virginia debt of \$10,300,000. The assessed value of real property in 1922 was \$1,208,796,000; of personal property, \$438,272,000.

Agriculture.—The Federal Census for 1920 reported 87,289 farms with a combined area of 9,569,790 acres. The value of all farm property in that year was \$496,439,617. The chief crops, with their acreage, yield and value for the year 1922, were: corn, 604,000 acres, 20,536,000 bushels, \$17,250,000; winter wheat, 240,000 acres, 2,760,000 bushels, \$3,367,000; oats, 200,000 acres, 4,600,000 bushels, \$2,668,000; buckwheat, 33,000 acres, 693,000 bushels, \$589,000; rye, 10,000 acres, 120,000 bushels, \$114,000; tame hay, 768,000 acres, 1,037,000 tons, \$17,422,000; sorghum sirup, 8,000 acres, 840,000 gallons, \$840,000; potatoes, 49,000 acres, 4,851,000 bushels, \$4,220,000; sweet

potatoes, 3,000 acres, 402,000 bushels, \$563,000; tobacco, 9,000 acres, 7,425,000 pounds, \$1,634,000; apples, 5,625,000 bushels; peaches, 715,000 bushels, and pears, 38,000 bushels. On 1 Jan. 1923 there were in the State 161,000 horses, valued at \$14,490,000; 15,000 mules, valued at \$1,530,000; 222,000 milk cows, valued at \$10,656,000; 365,000 other cattle, valued at \$12,374,000; 504,000 sheep, valued at \$3,478,000, and 316,000 swine, valued at \$3,887,000.

Mining.—Mining is the chief occupation of the inhabitants of the State, which ranks second in the production of coal, with 81,000,000 tons as the output for 1922. The State is first as a producer of natural gas, the yearly output being valued at approximately \$40,000,000. The State is also a large producer of petroleum, the 1922 yield being 7,026,000 barrels. The coal area extends over 17,280 square miles. All the basic minerals are found within the State and the total mineral output is considerably over \$200,000,000 in annual value.

Forestry, Lumbering.—The State is second in the production of hardwoods. Birch, ash, oak, spruce, hemlock and walnut are among its forest products.

Manufactures.—There are in the State approximately 3,000 manufacturing establishments with a total capital of \$225,000,000, and employing 110,000 wage earners, using raw materials valued at \$150,000,000, and turning out goods to the value of \$228,500,000. The leather industry is one of the most important. Other industries are foundry and machine shop products, car and railroad shops, etc.

Communications.—The State is well provided with waterways by the Ohio River and some tributary streams. The railroad mileage of the State is 4,012, and 660 miles of electric railways.

Government.—The State executive is a Governor, elected for four years, who receives a salary of \$10,000. The legislature is composed of two chambers, a Senate and a House of Delegates. The Senate has 30 members, elected for four years, and the House has 94 members, elected for two years. The State sends two Senators and six Representatives to the Federal Congress. For local administration the State is divided into 55 counties.

Officials.—(1922) Governor, E. F. Morgan; President of Senate, Harry G. Shaffer; Secretary of State, Houston G. Young; Attorney-General, E. T. England; Auditor, John C. Bond; Commissioner of Agriculture, J. H. Stewart; Treasurer, W. S. Johnson, and Superintendent of Education, George M. Ford.

Judiciary.—Members of Supreme Court.—President, W. N. Miller; James A. Meredith, J. H. McGinnis, Frank Lively, and M. O. Litz.

WEST VIRGINIA UNIVERSITY. a State co-educational institution, founded in 1867 and located at Morgantown, W. Va. In 1922-23 it had a faculty of 190 members, 2,672 students, property valued at approximately \$2,000,000 and an approximate income of \$1,500,000. Frank Butler Trotter, LL.D., is president.

WEST VIRGINIA WESLEYAN COLLEGE, a Methodist Episcopal co-educational institution, founded in 1890 and located at Buck-

hannon, W. Va. In 1922-23 it had a faculty of 30 members, 500 students, property valued at \$375,000 (exclusive of endowment), and an income of \$90,000. Thomas W. Haught was acting president in January 1923.

WESTERN COLLEGE FOR WOMEN, a non-sectarian educational institution, founded in 1855 and located at Oxford, Ohio. In 1922-23 it had a faculty of 38 members, 323 students, and property valued at \$1,500,000. Income figures for 1922-23 not given but for 1921-22 they were \$260,000. W. W. Boyd, Ph.D., is president.

WESTERN MARYLAND COLLEGE, a Methodist-Protestant co-educational institution, founded in 1868 and located at Westminster, Md. In 1922-23 it had a faculty of 32 members, 480 students, property valued at \$1,200,000 and an income of \$75,000. Albert Norman Ward, LL.D., is president.

WESTERN RESERVE UNIVERSITY, a non-denominational co-ordinate educational institution, founded in 1826 and located at Cleveland, Ohio. In 1922-23 it had a faculty of 347 members, a student enrollment of 2,354, not including extension students; property valued at \$9,684,064.50 and an income of \$276,647.65. James D. Williamson was acting president on 1 Feb. 1923.

WESTERN UNION COLLEGE, an Evangelical co-educational institution founded in 1900 and located at Le Mars, Iowa. In 1922-23 it had a faculty of 14 members, 265 students, and property valued at \$450,000. Income figures not given. Charles A. Mock, Ph.D., is president.

WESTMINSTER COLLEGE, a Presbyterian educational institution for men, founded in 1849 and located at Fulton, Mo. In 1922-23 it had a faculty of 13 resident members, 180 students, property valued at \$1,408,631.76 and an income of \$64,530. E. E. Reed, M.A., D.D., LL.D., is president.

WESTMINSTER COLLEGE, a United Presbyterian co-educational institution founded in 1852 and located at New Wilmington, Pa. In 1922-23 it had a faculty of 23 members, 303 students, property valued at \$550,000 and an income of \$100,000. W. Charles Wallace, D.D., is president.

WHEAT. The Department of Agriculture in its final report for the year estimated the 1922 wheat crop of the United States at 856,211,000 bushels, as compared with 814,905,000 bushels in 1921 and 833,027,000 bushels in 1920. Winter wheat production in 1922 totaled 586,204,000 bushels, as compared with 600,316,000 bushels in 1921 and 610,597,000 bushels in 1920. Spring wheat production in 1922 amounted to 270,007,000 bushels, as compared with 214,589,000 bushels in 1921 and 222,430,000 bushels in 1920. The total farm value of both varieties of wheat on 1 December of each of the three years mentioned was \$264,139,000 in 1922; \$754,834,000 in 1921, and \$1,197,263,000 in 1920. The per acre value of the crops was \$14.11 in 1922; \$11.85 in 1921, and \$19.58 in 1920. The yield per acre was 14 bushels in 1922; 12.8 bushels in 1921, and 13.6 bushels in 1920. The acreage totaled 61,230,000 in 1922; 63,696,000 in 1921, and 61,143,000 in 1920. The average farm price per bushel of

wheat on 1 December was 100.9 cents in 1922; 92.6 cents in 1921, and 143.7 cents in 1920. North Dakota led in production with a total yield of 123,234,000 bushels in 1922, as compared with 80,750,000 bushels in 1921 and 80,244,000 bushels in 1920. Kansas was second with 122,887,000 bushels in 1922, as compared with 128,695,000 bushels in 1921 and 143,078,000 bushels in 1920. Nebraska was third with 59,838,000 bushels in 1922, as compared with 59,875,000 bushels in 1921 and 60,480,000 bushels in 1920. Illinois was fourth with 55,432,000 bushels in 1922, as compared with 46,822,000 bushels in 1921 and 45,492,000 bushels in 1920. Montana was fifth with 40,370,000 bushels in 1922, as compared with 33,430,000 bushels in 1921 and 28,690,000 bushels in 1920. South Dakota was sixth with 40,012,000 bushels in 1922, as compared with 25,980,000 bushels in 1921 and 26,920,000 bushels in 1920. Missouri was seventh with 38,818,000 bushels in 1922, as compared with 34,952,000 bushels in 1921 and 37,653,000 bushels in 1920. Production in other States in 1922 was as follows: Maine, 275,000 bushels; Vermont, 189,000 bushels; New York, 9,014,000 bushels; New Jersey, 1,540,000 bushels; Pennsylvania, 25,444,000 bushels; Delaware, 1,766,000 bushels; Maryland, 9,537,000 bushels; Virginia, 10,375,000 bushels; West Virginia, 2,760,000 bushels; North Carolina, 5,508,000 bushels; South Carolina, 1,320,000 bushels; Georgia, 1,520,000 bushels; Ohio, 35,644,000 bushels; Indiana, 29,798,000 bushels; Michigan, 14,326,000 bushels; Wisconsin, 3,006,000 bushels; Minnesota, 27,036,000 bushels; Iowa, 16,867,000 bushels; Kentucky, 7,475,000 bushels; Tennessee, 4,484,000 bushels; Alabama, 218,000 bushels; Mississippi, 60,000 bushels; Texas, 9,992,000 bushels; Oklahoma, 31,350,000 bushels; Arkansas, 1,118,000 bushels; Wyoming, 3,060,000 bushels; Colorado, 21,776,000 bushels; New Mexico, 885,000 bushels; Arizona, 1,274,000 bushels; Utah, 5,682,000 bushels; Nevada, 550,000 bushels; Idaho, 24,275,000 bushels; Washington, 32,444,000 bushels; Oregon, 19,744,000 bushels, and California, 15,308,000 bushels.

Exports.—Exports of wheat from the United States during 1922 totaled 164,691,565 bushels, valued at \$206,338,408, as compared with 280,057,601 bushels, valued at \$433,053,336 exported in 1921. Exports of flour during 1922 totaled 15,024,628 barrels, valued at \$85,482,851, as compared with 16,800,805 barrels, valued at \$117,698,225, exported in 1921. According to the records of the Department of Commerce the United Kingdom was the United States' best customer for both wheat and flour in 1922, having taken 37,869,556 bushels of wheat and 2,228,838 barrels of flour. However, in 1921 shipments to the United Kingdom totaled 63,672,052 bushels of wheat and 3,997,691 barrels of flour. Exports to Canada in 1922 totaled 29,723,766 bushels of wheat and 50,367 barrels of flour. Exports to Italy in 1922 amounted to 29,044,942 bushels of wheat and 48,983 barrels of flour. The Netherlands took in the same year 13,026,462 bushels of wheat and 894,634 barrels of flour. The exports to France in 1922 totaled 13,022,101 bushels of wheat, while the name of France does not appear in the Department of Commerce's list of countries to which flour was exported in 1922.

World Production.—The International Institute of Agriculture at Rome on 5 Dec. 1922, estimated the world wheat crop of the year at 2,932,000,000 bushels, as compared with 2,967,000,000 bushels in 1921. At the same time it estimated the "carry-over" at 125,000,000 bushels, as compared with 84,000,000 bushels for the preceding year; and also estimated the exportable surplus of wheat at 950,000,000 bushels, as compared with 725,000,000 bushels for the preceding year. Its estimate of imports and import requirements was 923,000,000 bushels, as compared with 693,000,000 bushels for the year preceding. The exportable surplus of the principal exporting countries was estimated by the Institute as follows: Canada, 312,000,000 bushels; United States, 305,000,000 bushels; British India, 37,000,000 bushels; Argentina, 20,000,000 bushels; Australia, 33,000,000, and other countries, 29,000,000 bushels. Of the new (1922-23) crop in Argentina the exportable surplus was estimated at 147,000,000 bushels while that of Australia was estimated at 66,000,000 bushels. The 1922-23 wheat crop of Argentina was estimated by the International Institute of Agriculture at 215,320,000 bushels from an area of 16,081,000 acres, compared with 180,641,000 bushels from 13,927,000 acres in 1921-22. The latest estimate of wheat area in Australia was 10,000,000 acres, compared with 9,665,000 acres in 1921-22; and a forecast made late in 1922 placed production at 100,000,000 bushels, or about 28,000,000 bushels less than the production for 1921-22. The Canadian wheat crop of 1922 was reported on 4 Jan. 1923 by the Dominion Bureau of Statistics to have amounted to 391,425,000 bushels from an estimated area of 22,422,693 acres. This was the largest wheat crop reported for Canada since 1915. The yield per acre was 17½ bushels; also the highest since 1915, when 15,109,415 acres yielded an average of 26 bushels per acre. On 13 November, Alfred P. Dennis, special representative in Europe of the Department of Commerce, reported that the French wheat crop was then estimated at 255,000,000 bushels; the Spanish crop at 126,000,000 bushels, and the German crop about the same time was estimated at 69,670,000 bushels, compared with its 1921 crop of 107,798,000 bushels. The crop of Yugoslavia was estimated at 47,800,000 bushels, and the total European crop at 985,650,000 bushels, as compared with the 1921 crop, which was estimated at 1,215,084,000 bushels. According to the United States Department of Commerce the 1922 wheat crop of India, estimated at 9,813,000 tons, places that British colony third on the list of the great wheat producing countries of the world, being exceeded by only the United States and Canada. See also PLANT INDUSTRY.

WHEATON COLLEGE, a non-sectarian educational institution for women, founded in 1834 and located at Norton, Mass. In 1922-23 it had a faculty of 34 members, 358 students, and property valued at \$1,000,000. Income figures not given. Rev. Samuel V. Cole, A.M., D.D., LL.D., is president.

WHEELER, Edward Jewitt, American editor: b. Cleveland, Ohio, 11 March 1859; d. Lake Placid Club, Adirondacks, 11 July 1922. He was graduated at Ohio Wesleyan University in 1879, which college gave him the degree of

LL.D. in 1905. From 1884-98 he was editor of *The Voice* and from 1895-1905 of *The Literary Digest*. From 1905 until the time of his death he was editor of *Current Opinion* (once *Current Literature*). He was literary adviser to Funk & Wagnalls. Doctor Wheeler was the first president of the Poetry Society of America. He was also Vice-Chairman of the Citizens' Union of New York and a member of the Players', National Arts and MacDowell Clubs. During the World War he was one of a group of American editors who went to Europe as guests of the British government. At a dinner given by the *London Times* in London at which Doctor Wheeler presided, he was decorated by the French government in recognition of his editorial services in behalf of the Allies.

WHITENACK, Miller Royal, American physician: b. Newark, N. J.; d. there, 12 Dec. 1922. He was the son of Thomas C. Whitenack, a druggist, was graduated at Newark High School, Rutgers College and the College of Physicians and Surgeons, Columbia University. He became an interne in the City Hospital, Newark, and also engaged in general practice, which he abandoned 13 years before his death to specialize in the diseases of children. He was known to thousands as "The Children's Physician."

WHITE PINE BLISTER RUST. See AGRICULTURE, UNITED STATES DEPARTMENT OF; PLANT INDUSTRY, BUREAU OF.

WHITMAN COLLEGE, a non-sectarian co-educational institution, founded in 1859 and located at Walla Walla, Wash. In 1922-23 it had a faculty of 31 members, 493 students, property valued at \$1,452,350.12 and an income of \$156,394.18. Stephen B. L. Penrose, D.D., LL.D., is president.

WHITTEN, J. C., d. 5 June 1922. See HORTICULTURE.

WHITTIER COLLEGE, a Friends co-educational institution, founded in 1901 and located at Whittier, Calif. In 1922-23 it had a faculty of 25 members, 195 students, property valued at \$278,000 and an income of \$48,000. Harry N. Wright, Ph.D., is president.

WHITWORTH COLLEGE, a Presbyterian co-educational institution, founded in 1890 and located at Spokane, Wash. In 1922-23 it had a faculty of 15 members, and 120 students. No information given as to value of its property or income. Willard H. Robinson, Ph.D., is president.

WILBERFORCE UNIVERSITY, a co-educational institution for colored students, under the auspices of the African Methodist Episcopal Church, but non-sectarian. The industrial department is maintained by State of Ohio. It was founded in 1856 and is located at Wilberforce, Ohio. In 1922-23 it had a faculty of 65 members, 1,414 students and property valued at \$1,500,000. Income figures not given. J. A. Gregg, D.D., is president.

WILD ANIMALS. See BIOLOGICAL SURVEY, UNITED STATES BUREAU OF.

WILLAMETTE UNIVERSITY, a co-educational institution directed by the Methodist Episcopal Church, and located at Salem, Ore.

Trustees met 1 Feb. 1842; school opened 16 Aug. 1844. In 1922-23 it had a faculty of 38 members, 575 students, property valued at \$2,324,000 including campus, buildings, endowment, pledges, etc., and an income of about \$110,000. Carl G. Doney, Ph.D., is president.

WILLIAM AND MARY, College of, in Virginia, a non-sectarian co-educational institution founded in 1693 and located at Williamsburg, Va. Next to Harvard College, founded in 1636, it is the oldest institution of learning in the United States. In 1922-23, it had a faculty of 53 members, 800 students, property valued at \$600,000 (as of 1921) and an income of \$435,000. J. A. C. Chandler, LL.D., is president.

WILLIAMS COLLEGE, a non-sectarian educational institution for men, charter granted 22 June 1793 and located at Williamstown, Mass. In 1922-23 it had a faculty of 61 members, 630 students, property valued at \$6,864,715.02 and an income of \$376,651.39. Harry Augustus Garfield, L.H.D., LL.D., is president.

WILLIAM SMITH COLLEGE. See HOBART COLLEGE.

WILMINGTON COLLEGE, a Friends co-educational institution, founded in 1870 and located at Wilmington, Ohio. In 1922-23 it had a faculty of about 16 members, 260 students, property valued at \$750,000 and an income of \$73,576.70. J. Edwin Jay, A.M., is president.

WILSON, Sir Henry Hughes, British Field-Marshal: b. Edgeworthstown, Ireland, 5 May 1864; assassinated, London, 22 June 1922. He was the son of James Wilson, D.L.; J.P., of Currygrane. He was educated at Marlborough College and was graduated from the Royal Staff College. In 1884 he was given a commission in the Royal Irish Regiment but was transferred to the Rifle Brigade the same year. He took part in the Burma campaign in 1885-87 and was wounded; was again in service, 1887-89; was at the Staff College, 1892-94; served as Staff Captain, Intelligence Division, 1894-97; was Brigade-Major of the Second Brigade at Aldershot, 1897-99; with the Light Brigade in South Africa, 1899-1900, and in the year following was attached to Army Headquarters there. By the end of the Boer War he had reached the rank of Brevet Lieutenant-Colonel and was awarded the Distinguished Service Order. After the Boer War he was successively—assistant director of Staff Duties at the War Office, 1904-06; commandant of the Staff College, 1907-10; director of Military Operations at the War Office, 1910-14. It was a career of the kind that the army gives to those whom it regards as of commanding ability and brilliant intellect. Such men, however, are often the subject of sharply divided opinions in the British army, and throughout Field-Marshal Wilson's career there was as much difference among leading soldiers as to his professional merits as there was in the British navy on the subject of Fisher's. As Commandant of the Staff College, Wilson gave an impression of immense cleverness, mental agility, and power of exposition and persuasion, combined with a certain measure of "viewiness," a kind of fertility in ingenious strategic notions and fascinating, rather hit-or-miss, plans. There is a tradition that in one of his lectures some time before the war he pointed to Mons as the

likeliest place for a British expeditionary force to come into danger of defeat or envelopment in the event of an Anglo-French war with Germany. During those years before the great war he was more fully absorbed than any other British officer of note in the idea of such a war as actually followed. It is said that he spent several summers going over the terrain of northern France, familiarizing himself with its topographical features. When the war came General Wilson was first detailed as Assistant Chief of Staff to Sir John French. He probably showed to better advantage as a liaison officer than in any other capacity. He was certainly less happy as a Corps Commander, which he became when Sir John French's return to England closed the way to further rapid advancement for Wilson at G. H. Q. When in the spring of 1916 the British lost Vimy Ridge which through an extension of their lines they had taken over from the French, who had acquired it at an enormous cost of lives, Wilson lost his command and returned to England unemployed. In 1917, however, came the announcement of his appointment to the Versailles Advisory Committee which apparently astonished the British army in France. Wilson, thereafter was given the consolation of the Eastern Command. In 1917 there was an obvious Cabinet movement looking toward some kind of pooling of control—in short towards French control of the aggregate Allied forces. On 10 Nov. 1917, it was announced that a Supreme Political Council of the Allies had been created, and that this Council was to be assisted by a permanent central military committee to consist of Foch, Cadorna and Wilson. Thenceforth, till Haig spontaneously proposed at Doullens on 3 April 1918, that Foch should take sole and supreme command of all the Allied armies, Wilson was an eager and skilful worker to that end. His capacity for admiring French generals was great, and did not confine itself to Foch. According to Colonel Repington, Wilson caused intense irritation to the French Minister Painleve in April 1917 by extolling General Nivelle, whose failure in Champagne the sorely-tried Painleve was at that moment trying to liquidate. He was wiser or more fortunate in backing Foch. Nivelle, Foch and Wilson were all men who could talk extraordinarily well; they were perfect masters of the art of explaining a military project to the fullest advantage in conversation with civilian ministers, and possibly this common gift made a special bond between the trio. Marshal Wilson was the recipient of many decorations both British and foreign, including the Grand Cross of the Legion of Honor, the Grand Cross of the Russian White Eagle, and Grand Commander of the Bath. In 1921, he was made military adviser to the newly established Ulster Government and in this capacity advocated a policy of repression of Irish Nationalist sentiment which made him greatly disliked in the South and Southwest. He was assassinated before his London home by two men of Southern Irish sympathies, both of whom had served in the British armies during the war. The Field Marshal's funeral was one of the largest seen in the British capital in recent years. He was buried under the dome of the Cathedral of Saint Paul.

WILSON COLLEGE, a Presbyterian educational institution for women, opened in 1870 and located at Chambersburg, Pa. In 1922-23 it had a faculty of 36 members, 375 students, property valued at \$432,580 and an estimated income of \$250,000. Ethelbert D. Warfield, D.D., LL.D., Litt.D., is president.

WINDWARD ISLANDS, an insular group belonging to Great Britain and consisting of Grenada, Saint Vincent, half the Grenadines and Saint Lucia. The islands form the eastern barrier of the Caribbean Sea. Each island has its own institutions but there is a common court of appeals. Cocoa, sugar, rum, cotton, cottonseed, arrowroot and spices are the chief products. Saint Lucia also produces lime juice, syrups, bay oil, honey, hides, and logwood. There is a naval base at Port Castries. The Governor and Commander-in-Chief in 1922 was Sir G. B. Haddon-Smith, who resides at Saint George's, Grenada.

WINTER, Elizabeth Campbell, American authoress and actress, b. Loch Aroe, Scotland, 19 Dec. 1841; d. Los Angeles, Cal., 8 April 1922. She made her first appearance on the stage before the Civil War as a singer. Then she became a pupil of Edwin Booth and played Katharine to his Petruchio in 'The Taming of the Shrew.' She continued to play Shakespearean rôles, as well as other parts, appearing with Booth, James Henry Hackett, John Brougham, Lester Wallack. Emma Waller and Fanny Janauschek. About 1878 she turned her attention to writing. She wrote a number of short stories, several novels, including 'The Spanish Treasure' and 'The House of Daingerfield,' and wrote and adapted several plays, notably 'Deborah' and 'Mary Stuart,' for Helena Modjeska; 'The First Violin,' for Richard Mansfield; and 'Valjean,' based on Victor Hugo's 'Les Misérables.' In 1860 she became the wife of William Winter, the famous dramatic critic. Her pen-names were Elizabeth Campbell, Isabella Costellar, E. C. Winter and Elsie Snow.

WINTHROP COLLEGE, a State educational institution for women, founded in 1896 and located at Rock Hill, S. C. In 1922-23 it had a faculty of 146 members, 1,371 students, and property valued at \$2,500,000. Income figures not given. David B. Johnson, LL.D., is president.

WIRE INDUSTRY. The "classified" industry is confined to wire-drawing establishments that are not departments of rolling mills, although the larger part of the wire output comes from plants that both roll the rods and draw the wire. The Bureau of Census gave the total value of wire products reported by all classes of establishments equipped for drawing wire as \$251,234,800 in 1921; \$392,601,100 in 1919, and \$172,600,500 in 1914. The 1921 data were compiled from reports received from 107 establishments, comprising 61 independent wire-drawing mills (which constitute the classified industry); 26 wire-drawing departments of steel-rolling mills; and 20 other concerns, including wire-drawing departments of brass and copper rolling mills, manufacturers of electrical supplies, etc. The statistics, however, do not include the products of establishments which purchase wire to manufacture wire rope and cable,

wire fencing, wire nails, wire cloth, and various small articles made of wire. Plain steel and iron wire produced in 1921 totaled 1,725,400 tons, as compared with 2,508,900 tons produced in 1919; and 2,435,500 tons produced in 1914. Galvanized wire produced for sale in 1921 amounted to 204,400 tons as compared with 343,000 tons produced in 1919. There were 11,296,500 kegs of wire nails and spikes, of 100 lbs. each, produced in 1921, as compared with 12,429,200 kegs produced in 1919, and 12,886,600 kegs produced in 1914. Production of wire brads and tacks amounted to 2,646,400 lbs. in 1921, as compared with 5,461,800 lbs. produced in 1919. Wire staples produced in 1921 amounted to 41,735,500 lbs. as compared with 68,221,300 lbs. produced in 1919. Barbed wire (plain and coated) produced in 1921 totaled 139,100 tons as compared with 341,100 tons produced in 1919, and 343,700 tons produced in 1914. Wire rope, cable and strand produced in 1921 was 56,900 tons, as compared with 103,000 tons in 1919, and 52,700 tons in 1914. Woven-wire fence and poultry netting, plain and coated produced in 1921 amounted to 242,300 tons, as compared with 312,100 tons in 1919, and 411,500 tons produced in 1914. Cold-rolled flat wire produced in 1921 totaled 57,400 tons, as compared with the 1919 production of 45,900 tons. Bare copper wire produced in 1921 was 160,900 tons, as compared with 184,600 in 1919, and 138,900 tons in 1914. The total production of insulated copper wire and cables by all establishments in 1921 was in value \$98,333,000, as compared with \$128,682,000 in 1919, and \$69,506,000 in 1914. Brass wire produced in 1921 amounted to 21,972,000 lbs., as compared with 47,249,800 lbs. produced in 1919, and 39,614,500 lbs. produced in 1914.

WIRELESS TELEPHONY AND TELEGRAPHY. See RADIO TELEGRAPHY AND TELEPHONY.

WISCONSIN, one of the east north-central States, bounded north by Lake Superior and Michigan, east by Michigan and Lake Michigan, south by Illinois and Iowa, and west by Iowa and Minnesota. It has an area of 56,066 square miles, and in 1920 had a population of 2,632,067. It ranks 25th in size and 13th in population among its sister States. In 1920 the population included 2,616,938 whites, 5,201 negroes, 9,611 Indians, and 317 Asiatics. The foreign-born numbered 460,128, and included 151,250 Germans, 45,433 Norwegians, 22,896 Swedes, 11,187 Italians, 19,331 Canadians, 10,834 English and 7,809 Irish. Indian reservations in 1920 had a total area of 423 square miles, with a population of 10,313. The chief cities, with their populations in 1920, are: Milwaukee, 457,147; Racine, 58,593; Kenosha, 40,472; Superior, 39,624; Madison, the capital, 38,378; Oshkosh, 33,162; Green Bay, 31,017; Cheboygan, 30,955; La Crosse, 30,363; Fond du Lac, 33,427; Beloit, 21,284; Eau Claire, 20,880; Appleton, 19,561; Wausau, 18,661; Janesville, 19,293; and Manitowoc, 17,563.

Religion.—The principal Christian denominations have an aggregate membership of 1,162,032, of whom 594,836 are Roman Catholics, 297,310 Lutherans, 63,331 Methodists, 18,451 Congregationalists, 23,459 Presbyterians, 20,425 Baptists, 18,451 Episcopalians, and 10,427 members of the Reformed Church.

Education.—Attendance in the primary schools of the State is compulsory for all children between the ages of 7 and 14; in cities for the full school year, and in the smaller towns and villages for six months of the year. Where industrial and continuation schools exist children from 14 to 17 who are regularly employed must attend such schools for periods aggregating eight hours a week. There are in the State 14,122 primary school teachers and 405,467 pupils; 373 public high schools, with 3,179 teachers and 59,776 pupils, and 9 normal schools, with 347 professors and 3,773 students. There are about 20 colleges and academies which give courses in higher instruction. The State University is located at Madison.

Finances.—The balance on hand at the beginning of the fiscal year, 1 July 1921, was \$11,086,443.07. Receipts during the ensuing fiscal period amounted to \$51,958,421.07. Disbursements for the same period amounted to \$48,456,361.27, leaving a balance on hand at the beginning of the current fiscal year amounting to \$14,588,502.87. The appropriations for 1921 totaled \$33,267,402.42, while receipts amounted to \$32,359,536. For 1922-23, appropriations totaled \$28,967,715, against estimated receipts amounting to \$27,578,081.

The State has no bonded debt. The assessed valuation of all real property at the beginning of 1922 was \$3,670,090,188; of personal property, \$924,649,774.

Agriculture.—The State is largely agricultural and produces all crops grown in the north temperate zone. The chief crops, with their acreage, yield and value for the year 1922, were: Corn, 2,209,000 acres, 98,300,000 bushels, \$61,929,000; spring wheat, 81,000 acres, 1,239,000 bushels, \$1,276,000; winter wheat, 95,000 acres, 1,767,000 bushels, \$1,820,000; barley, 443,000 acres, 14,220,000 bushels, \$8,105,000; clover seed, 127,000 acres, 229,000 bushels, \$2,336,000; oats, 2,465,000 acres, 101,558,000 bushels, \$39,608,000; buckwheat, 25,000 acres, 360,000 bushels, \$313,000; rye, 489,000 acres, 7,139,000 bushels, \$5,140,000; cranberries, 2,000 acres, 62,000 bushels, \$620,000; tame hay, 3,155,000 acres, 5,553,000 tons, \$68,302,000; sorghum sirup, 2,000 acres, 120,000 gallons, \$132,000; beans, 8,000 acres, 76,000 bushels, \$274,000; potatoes, 328,000 acres, 40,672,000 bushels, \$13,422,000; tobacco, 40,000 acres, 45,600,000 pounds, \$9,120,000; apples, 2,024,000 bushels, and pears, 19,000 bushels. In 1920 there were 189,167 farms, having a combined area of 22,745,000 acres, of which 13,248,000 acres was improved land. On 1 Jan. 1923 there were in the State 643,000 horses, valued at \$66,872,000; 4,000 mules, valued at \$412,000; 2,195,000 milk cows, valued at \$125,115,000; 876,000 other cattle, valued at \$19,622,000; 341,000 sheep, valued at \$2,558,000, and 1,725,000 swine, valued at \$22,598,000. The wool clip of 1920 was 3,360,000 pounds.

Forestry.—Wisconsin was at one time covered with pine, hemlock and hardwood forests. However, most of these have been cut, the output in 1920 being one of the lowest on record, 1,275,000,000 feet. There remain in the State about 2,500,000,000 feet.

Mining.—Zinc is the principal mining output, followed by iron, granite, limestone, sand-

stone, natural cement, graphite and mineral waters. The 1922 iron ore output was 601,000 gross tons.

Manufactures.—The dressing of lumber is one of the principal industries, but in recent years dairying has advanced to first place. The value of the dairy products in 1921 was \$200,828,249.92. The State has more creameries than any other State. Other industries are those concerned with the refining of beet sugar, woodwork, agricultural implements, pig iron production, zinc smelting and fish curing.

Communications.—The State has 7,775 miles of steam railways and 847 miles of electric railways. There are 144,097 miles of telephone wires and 338,100 subscribers. The mileage of State roads aggregates 77,280 miles, of which 20,000 miles are improved. There are 7,500 miles of State trunk highways, and about \$10,000,000 is expended annually for maintenance and new construction. A huge tonnage of grain and flour, coal, lumber, ore and manufactured articles is shipped at the lake ports. Superior, at the head of the lake of that name, is one of the great arteries of traffic in the Northwest. There are many other resorts on the shores of the Great Lakes, and the smaller lakes of the State are also popular with recreation and vacationing parties.

Government.—The State executive is a Governor, who is elected for a term of two years and receives a salary of \$5,000. The legislature consists of a Senate of 33 members, elected for four years, and an assembly of 100 members, elected for two years. The State sends two Senators and 11 Representatives to the Federal Congress.

Officials.—Governor, John J. Blaine; Lieutenant-Governor, George F. Comings; Secretary of State, Elmer S. Hall; Attorney-General, William J. Morgan; Treasurer, Henry Johnson, and Superintendent of Education, John Callahan.

Judiciary.—Members of Supreme Court, A. J. Vinje, Chief Justice; M. B. Rosenberry, F. C. Eschweiler, W. C. Owen, C. H. Crownhart, Christian Doerfler, and B. W. Jones, Justices.

WISCONSIN, University of, a State co-educational institution, founded in 1848 and located at Madison, Wis. In the Fall of 1922 there were in the faculty 800 members including the part time staff. For the first semester in 1922-23, the student enrollment was 7,368. In 1921-22 the institution's property was valued at \$12,287,848.59 and its income for the year was \$5,680,219.92. Edward A. Birge, LL.D., is president.

WITTENBERG COLLEGE, a United Lutheran co-educational institution, founded in 1845 and located at Springfield, Ohio. In 1922-23 it had a faculty of 37 members, 1,350 students (all departments, 686 in the College proper), property valued at \$1,700,000 and an income of \$160,000. Rees Edgar Tulloss, D.D., Ph.D., is president.

WOFFORD COLLEGE, a Southern Methodist educational institution for men, founded in 1851 and located at Spartanburg, S. C. In 1922-23 it had a faculty of 19 members, 430 students, property valued at \$962,-

592.94 and an income of \$65,000. Henry Nelson Snyder, LL.D., is president.

WOMAN'S CHRISTIAN TEMPERANCE UNION, National, an organization founded in 1883 through the efforts of Frances E. Willard, and having as its objective worldwide prohibition, its international campaign, largely an educational one, designed to show the effect of alcohol on the human system, has been carried on in 40 different countries. While it does not put tobacco alongside of alcoholic beverages it, nevertheless, conducts, in the interests of boys and girls as a health measure an educational campaign upon that subject also. In 1917 the organization spent \$80,000 for patriotic and relief work. In March 1920 it launched a Jubilee Campaign to secure 1,000,000 members and to raise a fund of \$1,000,000. In December 1922 it was announced that since the beginning of the campaign more than 100,000 new members had been enrolled while the financial goal had been reached. Appropriations from the fund were made for native workers and scholarships in South America, China, India and Japan. During 1922, 2,000 new local unions were organized and over \$60,000 was spent in behalf of world prohibition, Americanization, child welfare, scientific temperance instruction and investigation, Christian citizenship, social morality and health, and to aid women in industry. The work of the National Woman's Christian Temperance Union is carried on by 25 departments. Among other activities it helps to maintain a Child Welfare Research Station at Iowa State University, contributing \$10,000 a year for a period of five years. Recently the Union completed new national headquarters at Evanston, Ill. The officers of the Union are: President, Miss Anna A. Gordon, Evanston, Ill.; Vice-President, Mrs. Ella Boole, Brooklyn, N. Y.; Corresponding Secretary, Mrs. Frances P. Parks, Evanston, Ill.; Treasurer, Mrs. Margaret Munns, Evanston, Ill.; Recording Secretary, Mrs. Elizabeth Preston Anderson, Fargo, N. D.; Assistant Recording Secretary, Mrs. Sara Hoge, Lincoln, Va.

WOMAN'S RELIEF CORPS, The, a national organization founded in 1883 as an auxiliary to the Grand Army of the Republic. Founded to afford relief to the Union veterans of the Civil War and to their dependents it has since broadened its field to include the veterans of all wars and their dependents. All loyal American women are eligible to membership, regardless of race, creed, or color. This organization is the only one, outside the Red Cross, privileged to wear the Red Geneva Cross. The headquarters of the organization is at Des Moines, Iowa. In 1922, there were 225,000 members. From its inception to 1922 the Corps has expended for relief and turned over to posts the sum of \$5,626,962.70. In 1922, it expended for relief \$205,533.84 and \$66,523.98 for patriotic work. Americanization etc.; donated \$1,000 for Southern Memorial Day; \$1,300 as Christmas gift to Civil War Army Nurses and \$50 to the London branch of the Civil War Veterans. In addition, it gave \$6,307.16 to World War Hospitals; \$688.38 to

Spanish War Veterans; \$2,116.37 to soldiers' homes; \$560.24 to widows' homes; \$249.13 to orphans' homes; \$3,115.38 for child welfare; \$355.21 for schools in the South; \$1,969.19 for Americanization; \$5,000 for scholarships at the International College, Springfield, Mass.; and \$2,000 for Near East Relief. The national President in 1922-23 is Mrs. Marie L. Basham, 803 Euclid Ave., Des Moines, Iowa; national Secretary, Mrs. Jenny Iowa Berry, 1407 Third Ave., Cedar Rapids, Iowa.

ELIZA BROWN-DAGGETT,
Past National President; National Counselor,
1922-23.

WOMEN IN INDUSTRY. See WOMEN'S BUREAU, UNITED STATES.

WOMEN IN POLITICS. According to a speech made in the French Senate in November 1922 during a discussion of the French Suffrage bill, there are 138,000,000 enfranchised women in the world. Although all but one feminine candidate for national office in the United States in 1922 was defeated, the representative women's organizations of the country claim this was a gala year for women in politics. On 7 Nov. 1922, Mrs. Rebecca Latimer Felton, long prominent in the feminist movement and known as the "Grand Old Woman of Georgia," was appointed to fill the unexpired term of the late United States Senator Thomas E. Watson. On 22 Nov. 1922, she took her seat, the first woman in the history of the country to do so. Mrs. Felton held her seat for one day only as she was replaced by the regularly elected senator who had delayed presenting his credentials in order that she might take part in one senatorial meeting.

Mrs. Winnifred Mason Huck of Chicago, was elected to Congress, to fill the unexpired term of her father, the late Representative William E. Mason. Mrs. Huck was the first mother to sit in Congress. Mrs. Mae Ella Nolan of San Francisco, was elected to the 67th Congress to fill the unexpired term of her husband, the late Representative John I. Nolan, and also to the 68th Congress for the full term, being now (1 April 1923), the only woman member of that body. Mrs. Nolan defeated six other candidates leading her closest opponent by 4,000 votes. Her husband was a labor leader in Congress and his widow will carry out his policies. With Miss Robertson of Oklahoma, who failed in her campaign for reelection, three women served in the fourth session of the 67th Congress.

Three women were defeated in November 1922 for the United States Senate. They were, Mrs. Anna Dickie Oleson, Democrat, of Minnesota; Mrs. Jack Cooper, Independent, of Wisconsin; and Mrs. Virginia Darlington Green, Independent, of Ohio. Thirty-three women were defeated for Congressional and Legislative seats in New York State, as was Miss Ruth Taylor, who ran for judge of the new Children's Court in Westchester County. Two women were elected to the Massachusetts Legislature, three to the New Jersey Assembly and six to the Ohio General Assembly—two to the Senate and four to the House.

On 10 Nov. 1922, Florence E. Allen, was elected to the Ohio Supreme Bench, leading her opponent, Judge Benson A. Hough, a candidate for re-election, by 20,000 votes. Miss Allen is the first woman to sit on the Supreme Bench of any State. She qualified 16 Dec. 1922. An interesting appointment was that of Miss Lucille Atcherson to a position in the Federal Department of State. She qualified 16 Dec. 1922. Dr. Ellen C. Porter, of Philadelphia, was appointed Commissioner of Public Welfare by Governor Gifford Pinchot of Pennsylvania, the first woman to hold a position in a governor's "Cabinet."

Other women holding high positions in Washington are Mrs. Mabel Walker Willebrandt, who succeeded Miss Annette Abbott Adams as Assistant Attorney General, and Mrs. Helen Hamilton Gardner, who is a member of the Civil Service Commission. Mrs. Bessie Parker Brueggeman, is chairman of the Employees' Compensation Commission; Miss Mary Anderson is director of the Women's Bureau, Department of Labor. Miss Grace Abbot succeeded Miss Julia Lathrop as head of the Children's Bureau in August 1921. Judge Kathryn Sellers, presides over the Juvenile Court of the District of Columbia; Miss Mary O'Toole is one of the five judges of the Municipal Court of the District.

In the United States comparatively little attention has been given by the various women's organizations to the election of women as public officials. Instead the women's clubs and associations which once worked for the enfranchisement of women are now working for the passage of welfare and equality laws. It is over an equality bill which is being urged by the National Woman's Party that this party is at loggerheads with the League of Women Voters, the Consumers League, the National Women's Trade Union League and numerous other organizations.

At the convention of the National Woman's Party held in Washington 12 Nov. 1922, it was decided to advocate a "blanket" measure based on the theory that women are the equals before the law of men and that "no distinction between the rights of the sexes should exist within the United States or any place subject to its jurisdiction." This organization wants the word "persons" substituted for "women" in all laws in which the latter word appears. While the representatives of the Party realize that women may lose the benefit of much of the special welfare legislation enacted to protect women in industry, they contend that, in the long run, women will benefit. At this meeting, the first held by the organization since the enfranchisement of women, Mrs. John Rogers of New York presided. Of a proposed budget of \$150,000 to cover legislative expenses, \$85,000 was pledged at the convention.

As a result of the resolutions passed at this convention, Senator Cotoilo, chairman of the Judiciary Committee of the New York Assembly, introduced therein on 23 Jan. 1923, 25 bills on behalf of the Party. The new measures provided for radical changes in the

Domestic Relations Law and in statutes affecting property. Of the 25 bills introduced, only four were favorably reported. One provides that the mother and father shall have equal rights in the property of any child dying intestate; another abolishes sex distinctions in the making of wills; a third provides that inheritances shall descend without sex distinction according to the common law rule; while the fourth asserts that in habeas corpus proceedings relative to a child detained by one parent, there shall be no prima facie right of custody in either but that the case shall be determined solely on its merits. The majority of the bills defeated were measures designed to guarantee the theoretical equality of women with men. According to an announcement, issued from the national headquarters of the party, similar bills will within the year be introduced in the legislatures of Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin and Wyoming.

At a convention of the League of Women Voters held in Washington 24 April 1922, it was decided to continue the work of education in citizenship, and the advocacy of uniform laws relating to women; also to insist upon the right of women to serve on juries, to hold public office, and to enjoy equal rights, with men in respect to the guardianship of children, and equal rights in the inheritance of real estate. This organization also insists upon the right of a married woman to her earnings in her home and her right to collect wages should she work for her husband outside of the home.

At the Convention of the National Consumers League, held in Washington in the Fall of 1922, it was announced that numerous women's organizations were joining the League in its condemnation of the "blanket bill" proposed by the National Woman's Party. The basis of their objection is that, although women are entitled to the franchise, to the right to hold office, to jurisdiction over their children and to anything else concerning their mental or moral attributes, no amount of legislation can make men and women biologically the same. Certain legislation it was asserted is necessary for the protection of women in industry.

The Consumers League has the support of a number of other national organizations of women desiring the enactment of a law which will give to women equal guardianship with their husbands over their children and guaranteeing also the equal right of both parents to the earnings of their children. The League also advocates a law which will give married women, who are wage earners, control over their wages. Under existing laws in many States the wages of married women may be claimed by their husbands. It is asserted by the Consumers League that instead of abridg-

ing the privileges of women, the legislation it advocates would actually give them more privileges without detracting from those already held, as would the measure advocated by the National Woman's Party.

Under the auspices of the League of Women Voters, the 'Pan-American Women's Conference was held in Baltimore, Md., 20-22 April 1922. Two thousand delegates and alternates representing all countries of the Western Hemisphere attended. The declared purpose of the conference was the promotion of international friendliness. Discussions related largely to women and their economic and political problems. Lady Astor, the first woman to sit in the British House of Commons attended the convention and made a speech.

Supported by the General Federation of Women's Clubs, a bill establishing national divorce and marriage relations was introduced in the United States Senate, 23 Jan. 1923, by Senator Capper of Kansas, but failed of passage. The object of the bill was to make hasty marriage more difficult and to place both marriage and divorce under Federal rather than State control.

Great Britain.—Of 33 women who were candidates in November 1922 for membership in the British House of Commons, two were elected—Lady Astor and Mrs. Thomas Winttingham. Lady Astor, it will be remembered was born in Virginia, U. S. A. Dame Helen Gwynne-Vaughan came within 260 votes of being elected. One of the high lights in the feminist movement in England in 1922 was the petition of Viscountess Rhondda, a peeress in her own right, to be allowed to sit in the House of Lords. She claimed a seat under a clause in the Sex Disqualification Removal Act which, in part, is as follows: "A person shall not be disqualified by sex or marriage from the exercise of any public function." Her petition was refused on the ground that the House of Lords is not "a public function." There are 18 other women in England, peeresses in their own right, who would have been entitled to seats in the House of Lords had the petition of the Viscountess Rhondda been granted. She declared, while in the United States in the summer of 1922, that she would continue to urge her right.

The English women fared better in their candidacies for local offices than they did in their attempt to enter Parliament. Sixty-five were elected County Councilors in England and Wales, including 16 elected to the London County Council—nearly one-eighth of its total membership. To the London Borough Council 145 women were elected; to the town councils outside of London, 128; and to the urban district councils, 91. More than 2,000 women are now serving on Boards of Guardians, and more than 300 have been appointed justices of the peace.

For the first time in the history of the country women—20 of them—were admitted to the bar in England in 1922. The first of these passed her examination in April. Two women are included among the delegates of the British Commonwealth of Nations to the League of

Nations—Mrs. Coombe Tenant, as a substitute delegate for England and Mrs. Dale, for Australia.

In Great Britain the women's organizations have devoted comparatively little time to the passage of laws either for the equalization of citizenship or for the protection of women in industry. Their chief aim has been to elect women to public office, claiming that their only opportunity for the passage of just laws will come with an equal representation. The Woman's Local Government Society is an organization which grew out of the belief that half the battle will be won when women share equally with men in office holding. Particular stress is laid on the expediency of electing women to local offices as most members of the House of Commons, have been graduated from local offices.

Despite the effort to elect women to office there is little indication of any plans for the formation in England of a separate and distinct woman's party in opposition to the already established parties. Both the Woman's Freedom League and the National Council of Women contended that only by men and women working side by side for mutual welfare can any lasting good be accomplished. During 1922 Viscountess Rhonda headed the Six Point Group which is a remnant of the separate women's party that was led by Mrs. Pankhurst.

The Women's Freedom League advocates the following measures: A bill making women eligible to vote at the age of 21 (the age at which men now vote) instead of 30—the present voting age for women; a mother's equal guardianship law; a law providing that juries be composed of six men and six women; a law requiring an equal number of women on all local government bodies; a law making all government posts from the Premiership and Cabinet officers to the civil and consular service to be open to women; laws providing for equal opportunities in all trades and trade unions and in all professions and equal pay for equal work. The organization has started a campaign to elect 300 women to Parliament.

At the annual conference of the National Council of Women of Great Britain and Ireland, 26 Sept. 1922, the keynote of the meeting was the necessity of an international, rather than a national, outlook. Such topics as "Women in International Life," "Children's Laws in Norway," "Temperance Legislation in the United States," "Treatment of Criminals in the Various Countries," and "Moral and Economic Interdependence of States" were discussed. A particular point was made of the mistake of teaching "the imperial outlook" in schools. A strong force in the political life of women in England is the Consultative Committee, composed of representatives of 65 organizations of professional women, which meets once a month to discuss desired and desirable measures.

There are two women representatives in the Parliament of Northern Ireland—Miss Dehra Chichester, representing Londonderry county and borough, and Mrs. Julia M'Mordie, M.D., from South Belfast. Lady Londonderry is

Justice of the Peace of Durham County, Countess Dysart, and Mrs. Power are members of the Irish Free State Senate and several women are members of the Lower House. The Irish Free State has conferred complete political equality on the women of the country.

Other Countries. The French Senate on 21 Nov. 1922 defeated the woman's suffrage bill, which originated in the House of Deputies three and a half years ago, by a vote of 156 to 134, and it cannot be brought up again for three years. Madam De Witt-Schlumberger, president of the French Suffrage Association, states that the work to make the bill a law will be continued.

Notwithstanding the fact that the Dutch women were enfranchised in 1919, they voted for the first time in the summer of 1922, as Parliamentary elections in Holland are held only every four years. Seven women were returned to a Parliament of 100 members. Two of the seven had been in Parliament since 1918, owing to the fact that women were eligible to this office in that country before they were given the franchise. Three of the seven women elected were prominent lawyers. In 1922, a law was passed in Holland permitting women, otherwise qualified, to become judges.

There are 35 women in the German Reichstag and 40 in the Prussian Parliament. There are approximately 20 women in the Austrian Legislature. Iceland has a woman representative in its legislature (Alting) in the person of Miss Ingibjorgh Bjarnason, elected in November 1922. Mme. Alexandra Kolontay is Russian Minister to Norway.

In Mexico, Rafael Nieto, Governor of San Luis Potosi, submitted a project which would have given suffrage to the woman of that State, but the Legislature did not pass it. The National Suffrage Party of Cuba petitioned President Zayas for equal suffrage, but the petition was denied.

The trouble between the British Government and the Egyptian Nationalists proved a stimulus both to the growth of women's parties in Egypt and to a hitherto unheard of participation of women in politics. The Ladies' Delegation—sometimes called the Ladies' Waft—was an organization formed to promote the freedom of Egypt. It is headed by Mme. Zaad Zaghlul (Sophia Hanem), who became the standard bearer of the cause of Egyptian freedom when her husband was banished by the British Government, January 1922. With the aid of La Femme Nouvelle, and the Mohammed Ali Society, both women's organizations, the Ladies' Delegation carried on a boycott of British goods. In March 1922, more than 80 motor cars filled with women formed a procession in the streets of Cairo to protest against the imprisonment of Zaghlul Pasha, martial law, the Sarwats Ministry and, what the Egyptians called, the false independence of Egypt. Another leader among Egyptian women is Mme. Bahi-el Dine Bey Barakof, a very young woman who has ignored the law of seclusion which her religion imposes upon its women, in order to aid Mme. Zaad Zaghlul in her efforts to free Egypt. Practically all this activity of Egyptian women came within the last year or so.

The Women's International League of Peace and Freedom met at The Hague 7-10 Dec. 1922. It was presided over by its president, Miss Jane Addams of Chicago, and was attended by 350 delegates representing 20 countries and 111 organizations. A resolution was passed unanimously calling for the holding of "A World Congress of States," through the instrumentality of the League of Nations, of a single nation or of a group of nations, in order to achieve a new peace. The reason given for this action was that the present lamentable state of Europe and its reaction on the rest of the world is due, in a large measure, to existing peace treaties, which are contrary not only to the Armistice terms but infringe nearly all of ex-President Wilson's Fourteen Points. A resolution was sent by the League to the Conference of Ministers sitting in London 9 December, welcoming the suggestion advanced at the Assembly of the League of Nations that the question of reparations be considered from an international standpoint.

DOROTHY N. BRYANT.

WOMEN IN SPORTS. See SPORTS.

WOMEN'S BUREAU, United States, a bureau of the United States Department of Labor, which has as its function the formulation of standards and policies to promote the welfare of wage-earning women, to improve their working conditions, and to advance their opportunities for profitable employment. The need for a government agency to perform such a service is apparent from a bird's-eye view of the recent census statistics on women workers, and from an analysis of the activities of the Women's Bureau during the past year, 1922.

In continental United States 8,549,511 women 10 years of age and over were gainfully employed on 1 Jan. 1920. The occupational distribution of these women was as follows: 2,186,924 in domestic and personal service, 1,930,341 in manufacturing and mechanical industries, 1,426,116 in clerical occupations, 1,084,128 in agriculture, forestry, and animal husbandry, 1,016,498 in professional service, 667,792 in trade, 213,054 in transportation, 21,794 in public service (not elsewhere classified), and 2,864 in extraction of minerals.

Not far from three million women (2,832,981), or one-third of all those gainfully employed, were found in manufacturing and mechanical industries, trade, transportation, and public service; and it is with this group of women workers that the activities of the Women's Bureau have been chiefly concerned. An analysis of these several classifications may prove helpful to those not thoroughly familiar with census nomenclature:

Under manufacturing and mechanical industries are grouped not only all factory laborers and semi-skilled operatives, but all persons employed in the skilled building and hand trades, together with their apprentices, and all persons working in manufacturing industries in proprietary, official, and supervisory capacities. From a numerical standpoint, as far as women are concerned, the most important manufacturing industries in the country are given in the following summary of selected* industries arranged

in descending scale in regard to the number of women employed:

INDUSTRY	Number of women
Clothing factories.....	272,005
Cotton mills.....	165,854
Cigar and tobacco factories.....	97,822
Food industries.....	88,540
Knitting mills.....	86,022
Shoe factories.....	78,428
Silk mills.....	75,498
Iron and steel industries.....	70,410
Woolen and worsted mills.....	65,704

* All industries included in which 50,000 or more women were employed in 1920.

Under trade are listed wholesale and retail dealers and most of their employees; bankers, brokers, and money lenders; real estate and insurance agents; undertakers; and workers in coal and lumber yards, grain elevators, stockyards, and warehouses. There is no occupation listed under "trade" in which women are not engaged, although almost four-fifths of the women included in this division were listed under the two sub-classifications—saleswomen and clerks in stores.

The term "transportation" includes water, road, street, and railroad transportation, also transportation by express, post, telegraph and telephone. The 178,379 women telephone operators, the 16,860 women telegraph operators, and the 7,054 women laborers for the steam and street railroads were the most important groups. They comprised 95 per cent of the whole number of women employees in transportation enterprises in 1920.

The small proportion of women listed under public service constitute for the most part a residuary group, those working for the government, who could not be properly classified under any other general division of occupations. The only sub-classification in this division, showing more than 5,000 women employees, was that of officials and inspectors, there being 17,239 recorded for the county, city, State, and Federal governments.

The foregoing interpretation of terms and presentation of figures indicates the great variety of work and the tremendous task confronting the Women's Bureau, a young organization exceedingly limited in personnel and appropriation.

The chief activity of the Bureau during 1922 was its investigations of wages, hours, and working conditions of women in industry in a number of States. Emphasis has been put upon the collection of data in the States because of the great scarcity of such information, because of the insistent requests for it from local groups who need details upon which to base their programs, and because of the rapid changes in industry which render it important that up-to-date information shall be available not only as it is applicable to local conditions, but as it is combined with other data to give a broader picture of conditions affecting women in industry.

These investigations made during the year comprise 11,000 women and 151 establishments in South Carolina, 5,700 women and 129 establishments in Alabama, 3,100 women and 188 establishments in Arkansas, 16,900 women and 160 establishments in Missouri, 32,000 women and 300 establishments in Ohio, and 35,000 wo-

men and 300 establishments in New Jersey, making a total of 103,700 women and 1,228 establishments in the six States.

In other ways the Women's Bureau co-operated with the various States. In its relation with State labor departments, for example the Bureau found during the past year a constantly developing need for an interchange of ideas and experiences, among those who are most immediately concerned with the subject of wage-earning women. In conformity with its policy of serving as a clearing house for such material, the Bureau continued to issue the monthly news letters, and thereby to supply information on special activities in the States, by the Federal government, or in foreign countries, relating to women in industry. The Bureau also supplied data for the use of State officials upon request. For the use of the Industrial Commission of Wisconsin, the Bureau investigated rates of payment for women employed in the tobacco industry in the country. At the request of the Industrial Commission of North Dakota, the Bureau advised and assisted in making a study of the cost of living for a working woman in that State. A similar study was made by the Bureau for the Minimum Wage Commission of the District of Columbia.

Several investigations in connection with women in government service also were completed during the year. Two studies, one of the conditions of work for women employees in the Bureau of Engraving and Printing, and the other of the wages and working conditions for women employees in the mail equipment shops of the Post Office Department, both of which were initiated in 1921, were reported upon in the early months of 1922. In June, 1922, at the request of the Secretary of Labor, an investigation was made of the administration of the Government hotels, in view of the misunderstanding and lack of co-operation existing between the management and guests.

Because of the investigations already outlined and made at the request of various agencies, and because of the limitations in appropriation and personnel, it was not possible for the Bureau in 1922 to make extensive surveys of special conditions affecting wage-earning women. Nevertheless, two studies which had already been undertaken were completed and several additional ones made. The report on the home responsibilities of wage-earning women, which had been in preparation for some time, was finished. This report contains significant figures showing the importance of women as economic factors in the home, and the information thus made available should serve to clarify public opinion on the much discussed subject of women's need to work and the social significance of the living wage. A report on the hours, wages, and working conditions of 2,070 women in 31 candy factories in Chicago and 632 women in 19 candy factories in Saint Louis in 1920-21 also was completed. Another report undertaken in 1922 is that on women's contributions in the field of invention. This report was compiled and prepared after an analysis of the records of the United States Patent Office, the object being not only to show the progress in inventions made by women, but to open the way to the development

of practical suggestions for the reduction of the existing handicaps under which women labor.

Two special reports dealing with the census statistics regarding women were published by the Bureau in the latter part of the year. One, entitled "The Occupational Progress of Women" is an interpretation of census statistics of women in gainful occupations and a comparison of the number of women employed in such occupations in 1910 and 1920. The other report, "The Family Status of Breadwinning Women," is a study of material on the census schedules of a definite locality. Since the Bureau of Census, on account of limited appropriation, was unable to publish this material, the Women's Bureau at the request of the National League of Women Voters and with the consent of the Secretary of Commerce undertook to assemble and publish the facts about the breadwinning women in one typical industrial city. The purpose of this report was not only to disclose the kind of information obtainable from the census schedules but to show the value of such data as a guide to the sort of extensive surveys needed to remedy certain palpably serious conditions.

Although the investigations conducted by the Bureau form the most conspicuous part of its work, another very important function is the continuous research work necessary in order to reply to the requests which are constantly being made for detailed information on special topics. Definite data regarding the operation and application of labor laws, for which material there has been great demand, necessitates careful examination of labor legislation in the various States. Statistics from the Census, from the Bureau of Labor Statistics, and from other sources have been consulted frequently to meet the requests for general statistical information.

In order to disseminate the material secured through investigations and research work, it was necessary throughout the year to present such data and facts in popular form. Consequently, in connection with the reports published, efforts were made to secure general circulation of significant information through newspapers and magazines. Material was furnished special writers upon request. Articles and news releases were prepared and published. During November and December 1922, popular radio talks on various phases of women in industry were broadcast weekly. The exhibit material of the Bureau was increased greatly and very generally circulated throughout the country. In addition to the film "When Women Work," the 15-panel exhibit illustrating the standards for the employment of women in industry, the colored maps and charts depicting the labor legislation for women in various States—all of which were used constantly throughout the year—two special exhibits were prepared in the closing months. One of these is a large exhibit showing the importance of women in industry and the significance to the community of their working hours and earnings. The other is a series of six miniature theatres which illustrate standards of hours, wages, and working conditions for women in industry.

In general, during the year the Bureau maintained close contact with organizations and persons interested in all problems concerning women workers. The Director of the Women's Bureau

served on many industrial committees, co-operated in an advisory capacity with other agencies, and addressed a number of audiences on the subject of women in industry.

MARY V. ROBINSON,

Women's Bureau, United States Department of Labor.

WOODHEAD, SIR German Sims, English pathologist: b. Woodland Mount, Huddersfield, England, 29 April 1855; d. January 1922. He was the eldest son of the late Joseph Woodhead, editor of the *Huddersfield Examiner* and at one time a member of Parliament for Spen Valley. The younger Woodhead received his preliminary education at Huddersfield College, thereafter was graduated with the degree of M.D. from Edinburgh University, and later studied at Berlin and Vienna. From 1899 until his death he was professor of pathology at Cambridge University and was one of the leading pathologists of his day. In 1878 he was elected president of the Royal Medical Society. From 1887-90 he was superintendent of the laboratory of the Royal College of Physicians, Edinburgh; from 1892-95 he was assistant commissioner to the Royal Commission on Tuberculosis, and in 1902 was made a member of this commission. He was president of the Royal Microscopical Society from 1890-99. At one time he held a commission as lieutenant-colonel in the Royal Army Medical Corps. Other important positions held by him were: inspector of laboratories in the Military Hospitals in the United Kingdom; advisor in pathology to the War Office for the United Kingdom; medical officer of the Irish Command Depot, Tipperary; member of the executive committee of the Imperial Cancer Research Fund; member of the Scottish Universities Committee; and director of the laboratories of the Conjoint Board of the Royal Colleges of Physicians (London) and Surgeons (England). He was elected an honorary fellow of the Henry Phipps Institute of Philadelphia in 1902 and was an honorary fellow also of the Institute of Sanitary Engineers. He was a fellow of the Royal College of Physicians, Edinburgh, the Royal Society of England, and of Trinity Hall, Cambridge. The honorary degree of LL.D. was conferred upon him by the universities of Toronto and Birmingham. He was knighted in 1919. He was for many years president of the Edinburgh University Athletic Club; president of the British Medical Temperance Association, and president also of the British Temperance League. His publications include 'Practical Pathology' (1883); 'Practical Mycology' (with Arthur W. Hare, M.B. 1885); 'Bacteria and their Products' (1891); 'Report to the Royal Commission on Tuberculosis' (1895); 'Report on Diphtheria to the Metropolitan Asylums Board'; 'Village Settlements for Tuberculosis' (with P. C. Jones Varrier); and contributions to medical journals. For some time he was editor of the *Journal of Pathology and Bacteriology*.

WOOD TESTING. See FOREST SERVICE. UNITED STATES.

WOODROW WILSON FOUNDATION. The awarding of the Nobel peace prize in 1920 to Woodrow Wilson gave Mrs. Charles E. Simonson and Mrs. Charles I. Tiffany, both of

New York, the idea that a similar foundation should be established in this country in recognition of the national and international services of Mr. Wilson, twice President of the United States, who "furthered the cause of human freedom and was instrumental in pointing out effective methods for the co-operation of the liberal forces of mankind throughout the world." The Foundation was actually established 23 Dec. 1920, when 23 women met at Mrs. Tiffany's home in New York. At a meeting held 15 March 1921, at the Hotel Biltmore, the organization of the Foundation was completed. The first appeal for funds was made 16 Jan. 1922 and at a meeting held in New York City on 27 Dec. 1922 when the permanent organization of The Foundation was accomplished, it was announced that the contributions to the proposed \$1,000,000 fund at that time amounted to over \$800,000. The fund was turned over on the date mentioned to the trustees of the Foundation and on the following day (28 December) the former President's 66th birthday, a committee was sent to Washington to notify Mr. Wilson of the actual creation of the Foundation in his honor.

The award or awards from the income of the Foundation will be made from time to time by a nationally constituted committee to the individual or group that has rendered, within a specified time period, meritorious service to democracy, public welfare, liberal thought or peace through justice. The following are the members of the permanent board of trustees which has charge of the administration of the Foundation and which will help to name the Jury of Award of 25 members. President, E. A. Alderman, of the University of Virginia; General Tasker H. Bliss, former Chief of Staff, U. S. Army, Washington, D. C.; Cleveland H. Dodge, New York; Hon. Samuel Gompers, Washington, D. C.; Ernest M. Hopkins, President of Dartmouth College; Dr. William J. Mayo, Rochester, Minn.; Mr. Cyrus H. McCormick, Chicago, Ill.; Henry Morgenthau, New York; Roland S. Morris, Philadelphia, Pa.; Franklin D. Roosevelt, New York; Mrs. Charles E. Simonson, 404 Henderson Ave., West New Brighton, Staten Island; Hon. T. J. Walsh, United States Senate Building, Washington, D. C.; William Allen White, Kansas; President Mary E. Woolley, Mount Holyoke College, Mass.; Mrs. Charles L. Tiffany. The National Headquarters of the Foundation are at 150 Nassau Street, New York City. The members of the board were installed 1 May 1923. Doctor Hopkins was elected president and Mrs. Tiffany, secretary.

WOOL. In a report issued 5 March 1923, the United States Department of Commerce, estimated the 1922 world wool clip of the commercially important wool-producing countries at 2,270,737,000 pounds, as compared with the 1921 clip of 2,354,735,000 pounds and the average clip for the years 1909-13 of 2,545,565,000 pounds. The 1922 clip of the United States, totaled 261,095,000 pounds, as compared with the 1921 clip of 273,064,000 pounds, and the five-year average clip for the years 1909-13 of 314,110,000 pounds. Australia is the leading country of the world in the production of wool, its 1922 clip coupled with that of Tasmania totaled 618,475,000 pounds as compared with 626,344,000 pounds in 1921,

and the five-year average clip for the years 1909-13 of 705,146,000 pounds. The following table, compiled by the Department of Commerce, indicates in thousands of pounds (i. e. last 000 omitted) the average pre-war (1909-12) production, the 1921 production and the 1922 estimated production of the commercially important wool producing countries. In instances where official 1922 returns were unobtainable, the 1921 figures, it was stated, were substituted tentatively.

ANNUAL WOOL PRODUCTION

(000 omitted)

COUNTRIES	Annual production in —		
	1909 to 1913, pounds	1921, pounds	1922, pounds
NORTH AMERICA			
United States.....	314,110	273,064	261,095
Canada.....	11,210	21,551	19,125
Mexico.....	7,000	750	792
Total.....	332,320	295,065	281,012
SOUTH AMERICA			
Argentina.....	358,688	286,000	231,483
Brazil.....	35,000	27,000	27,000
Chile.....	17,430	31,500	31,500
Peru.....	9,949	14,500	15,000
Uruguay.....	156,968	95,000	80,000
Totals.....	578,026	454,000	384,983
EUROPE			
Austria.....	15,360	1,250	1,250
Belgium.....	1,060	1,205	825
Bulgaria.....	23,700	17,637	17,637
Czechoslovakia.....		4,303	4,303
Denmark.....	3,508	1,598	1,323
Estonia.....		13,224	13,224
Finland.....		3,250	3,300
France.....	80,688	38,500	38,220
Germany.....	25,600	54,013	51,809
Greece.....	14,000	11,934	13,420
Hungary.....	17,637	9,370	9,370
Iceland.....	1,980	1,980	1,980
Italy.....	55,000	50,000	50,000
Netherlands.....	3,556	4,400	4,400
Norway.....	8,160	4,409	4,409
Poland.....		6,725	6,725
Portugal.....	10,000	7,275	7,717
Rumania.....	13,228	14,000	18,032
Spain.....	52,000	165,347	165,347
Sweden.....	6,060	6,613	6,613
Switzerland.....	1,049	800	800
Turkey.....	28,000	*	*
United Kingdom.....	134,000	102,297	103,217
Jugoslavia.....	25,446	29,762	24,251
Other.....		15,000	15,000
Total.....	520,032	563,790	562,345
AFRICA			
Algeria.....	35,221	35,550	35,155
British South Africa.....	157,761	161,700	187,000
Morocco.....	14,850	18,640	19,175
Tunis.....	3,735	6,930	6,765
Total.....	211,567	222,820	248,095
AUSTRALIA			
Australia and Tasmania.....	705,146	626,344	618,475
New Zealand.....	198,474	191,614	175,000
Total.....	903,620	817,958	793,475
Grand total.....	2,545,565	2,354,735	2,270,737

* Shown in succession states.

"While the production estimates of the commercially more important countries show decreases from pre-war averages and a small decrease from 1921, it must be borne in mind" says the Department of Commerce, "that the post-war lowered standards of living in many European countries have had a coincidentally depressed effect upon wool consumption. The large wartime wool accumulations in certain countries, undoubtedly had a depressing effect

upon the sheep industry in these countries from which they have not fully recovered. Notable examples are Australia, New Zealand, Argentina, and Uruguay. Some stocks of wool from war accumulations still exist, 'BAWRA' holding on 31 Dec. 1922, amounted to 913,265 bales or somewhat less than 30 per cent of its peak stocks of two years previous. Other commercially important countries such as British South Africa and Spain are now showing increasing production. The Argentine situation is obscure and perplexing, the number of sheep having decreased in the course of the year owing to floods in some sections and droughts in others. Estimates of wool production in this country vary from 180,000,000 to 250,000,000 pounds—the estimate of 231,483,000 pounds of Ernesto Tornquist & Cia., Buenos Aires, is adopted in this survey tentatively."

The consumption of raw wool in the United States during 1922 was estimated as between 650,000,000 and 675,000,000 pounds. According to the Bureau of Foreign and Domestic Commerce, the outstanding feature of the wool import trade of the United States during the first nine months of 1922, was a large decrease in the receipts of fine wool with a corresponding increase in the receipts of coarser grades. The combined imports of cloth, combing and carpet wool during the 1922, January to September period, totaled 272,782,797 pounds, as compared with imports of 285,085,739 pounds during the corresponding period of 1921. Imports of clothing wool during the first nine months of 1922 totaled but 29,072,952 pounds as compared with 200,961,541 pounds imported during the corresponding period of 1921. Of the 1921 imports of clothing wool, 195,000,000 pounds were imported prior to 28 May, upon which date the Emergency Tariff Act became effective. Imports of combing wool during the 1922 period referred to, totaled 109,721,560 pounds as compared with 10,190,330 pounds imported during the corresponding period of 1921. Carpet wool imported during the January to September period of 1922 totaled 133,988,284 pounds as compared with 73,933,868 pounds imported during the corresponding period of 1921. Although the 1922 imports of all kinds of wool were 12,419,158 pounds less than those for 1921, they still exceed the imports for the corresponding period of 1913 by 158,851,557 pounds. Until the outbreak of the war, the wool import trade of the United States was quite regular, the annual receipts having averaged somewhat more than 200,000,000 pounds. Economic disturbances since 1913 and changes brought about by the tariff, however, have caused marked fluctuation in both the character and quantity of this trade. Moreover, according to the United States Department of Agriculture, the textile industry in most European countries is now approaching pre-war status and these countries are not only manufacturing for their own needs but for export trade as well. Wool imports into the United States reached their peak in 1916 when they registered 399,261,331 pounds during the first nine months. The explanation of this tremendous importation of raw wool is to be found in the war demand for finished materials particularly on the part of Italy, Russia, France and Canada.

The leading wool manufacturing countries are

the United States, England, France, Germany and Belgium, while the leading sheep raising countries are Australia, Argentina, Uruguay, South Africa, Russia, China, Great Britain and the United States. The United States and Great Britain are the only countries which both grow and manufacture wool on a large scale. Great Britain, however, produces less than half as much wool as the United States. The clip in this country during the last 35 years has averaged 300,000,000 pounds per year. However the greater part of the world's exportable surplus of wool suitable for clothing is produced in the British Commonwealth, while carpet wool is produced chiefly in China, India, Russia, Siberia, Turkey and the Balkan States. In addition to the production figures given in the table above, the Department of Commerce estimated the production of wool in other countries of the world in 1922 at a total of 413,416,000 pounds, but states that these figures are based solely on unofficial opinion without adequate statistical backing and that most of such countries with the possible exception of China and India, have practically no consequential commercial importance in the world wool trade. Of the total of wool produced in such countries, the production of Asia was estimated at 239,466,000 pounds and the production of European Russia at 150,000,000 pounds.

WOOSTER, College of, a Presbyterian co-educational institution, chartered in 1866 and located at Wooster, Ohio. In 1922-23 it had a faculty of 42 members in Arts Department and six in Music Department, 800 students, property valued at \$1,000,000; an endowment of \$1,500,000 and an income of \$200,000. Charles Frederick Wishart, D.D., LL.D., is president.

WORCESTER POLYTECHNIC INSTITUTE, a non-sectarian educational institution for men, founded in 1865 and located at Worcester, Mass. In 1922-23 it had a teaching faculty of 58 members, 504 students, property valued at \$4,170,000 and an income for 1921-22 of \$282,000. Income figures for 1922-23 were not available. Ira Nelson Hollis, Sc.D., is president.

WORK, Hubert, United States Secretary of the Interior: b. Marion Center, Pa., 3 July 1860. He received his early education at the State Normal School at Marion Center and subsequently attended the universities of Michigan and Pennsylvania and in 1885 was graduated in medicine from the latter. Removing to Greeley, Colo., he established a practice there for two years after which he moved to Fort Morgan and later to Pueblo, Colo., where he became a specialist in mental and nervous diseases. He founded in 1896 the Woodcroft Hospital for Mental and Nervous Diseases, of which he is director. His work at this institution attracted national attention among the members of the medical profession and in 1911 he was made president of the American Medico-Psychological Association. In 1921 he was elected president of the American Medical Association. For many years also he was president of the Colorado State Medical Society, the State Board of Medical Examiners and for 10 years was a member of the State Board of Health. When the United States entered the World War, Doctor Work relinquished his medical practice and volunteered for service

in the Medical Corps of the Army. He was commissioned a major and assigned to the staff of Provost Marshal General Crowder as acting liaison medical officer with supervision of medical details of the selective draft. In the course of the conflict he was advanced to the rank of colonel in the Medical Corps and at present is a colonel in the Officers Reserve Corps. From the time of his removal to Colorado, Doctor Work has been active in politics. He was delegate at large to the Republican National Convention of 1908, Republican State Chairman in 1912-14 and the Republican nominee for the United States Senate in 1916. He also served as Republican National Committeeman from 1916 to 1920. On 2 March 1922, Doctor Work was nominated Postmaster General by President Harding to succeed Will H. Hays, who had resigned. His nomination was confirmed by the Senate the same day and he took over the portfolio on 4 March 1922. Just one year later (4 March 1923) he succeeded former Senator Albert B. Fall, as Secretary of the Interior.

WORKMEN'S COMPENSATION. See LABOR LEGISLATION.

WORLD ASSOCIATION OF STATES. See PEACE AND ARBITRATION, INTERNATIONAL.

WORLD INTERNATIONAL TRADE. Statements in United States currency of world international trade in recent years are extremely difficult. Prior to the war the transformation of currencies of the principal countries of the world to United States dollars was comparatively easy by reason of the well established standard of par of exchange. With the large increases in paper currency of many of the countries of Europe during and following the war and the consequent fluctuation and reduction in exchange rate, the difficulties of transforming the official import and export figures of the respective countries into the common unit of United States dollars, increased year by year as exchange rates lowered and fluctuations grew more frequent. While records are readily available of the exchange rate, measured in dollars, of any currency at any given date or hour, the fact that fluctuations occur not only from hour to hour but day to day intensifies the difficulty of obtaining a reliable annual average upon which to transform the official trade records of the respective countries to United States dollars. This transformation has been made, however by the use of the annual averages established by high financial and statistical authorities.

World international trade in 1922 approximated \$45,000,000,000 against \$40,000,000,000 in 1921, \$65,000,000,000 in 1920, \$75,000,000,000 in the high record year 1919, and \$40,000,000,000 in the year preceding the war. This estimate of the value of world international trade in 1922 is based upon returns from 33 principal commercial countries transforming the currency valuations to United States dollars at the annual average rate of exchange for 1922, 1921 and 1920, utilizing the normal par of exchange for 1913. While higher prices are doubtless responsible for a considerable share of the increase in 1922, it is quite apparent that the quantity of merchandise moved is also greater than in 1921. In France the quantity of merchandise imported in 1922 is stated at 51,000,000

metric tons against 40,000,000 in 1921, and of exports 22,000,000 tons in 1922 against 16,000,000 in 1921. In Belgium, the importation was 21,000,000 tons in 1922 against 17½ million in 1921, though the exports show a slight decline. In Netherlands the tonnage of both imports and exports show an increase in 1922 compared with 1921, and this is also true in Czechoslovakia, Greece and certain other of the European countries. Apparently, however, a considerable part of the 1922 increase in value of international trade is due to higher prices. Of the 75 articles included by the U. S. Government in its monthly tabulation of import prices, about 60 per cent show higher prices in December than at the beginning of the year, while on the export side about 65 per cent of the 75 articles show higher prices at the close of the year than at its beginning. That the United States is steadily gaining in its share of world international trade is evidenced by a comparison of the 1922 figures with those of earlier years. Our share of world trade

grew from 9.8 per cent in 1910 to 10½ per cent in 1913, 14 per cent in 1916, 17½ per cent in 1920, and 16½ per cent in 1922.

The table which follows shows in United States currency the total imports and total exports of the principal countries of the world in 1920, 1921 and 1922 compared with the figures of 1913, the year immediately preceding the war. The 1920 figures are those of the Department of Commerce except as to the Latin American countries for which the statements issued by the Pan American Union in December 1922, are utilized. The 1921 and 1922 figures are based upon official reports of the respective governments transformed to United States dollars at average annual exchange rates. While the tabulation includes figures for all of the more important nations of the world, many of the smaller countries and political divisions have been necessarily omitted by reason of the absence of complete statistics for one or more of the years represented by the tabulation.

IMPORTS AND EXPORTS OF PRINCIPAL COUNTRIES IN 1922, 1921, 1920 AND 1913

(Stated in U. S. Dollars, Reduced at the Annual Average Rate of Exchange.)

	Imports				Exports			
	1922	1921	1920	1913	1922	1921	1920	1913
(ooo omitted)								
Australia *	\$456,582	\$630,638	\$362,245	\$388,378	\$566,362	\$487,576	\$529,123	\$365,177
Austria	332,327	344,217	.....	1550,000	206,044	183,150	.....	1450,000
Belgium	723,646	743,807	743,996	894,748	476,091	528,348	528,878	701,362
Brazil	215,934	221,652	470,391	326,592	268,866	223,224	394,292	318,816
Br. Guiana	No data	No data	18,955	8,250	12,080	12,393	22,483	10,680
Br. Malaya	233,192	No data	No data	297,557	234,912	No data	No data	253,727
Br. So. Africa	209,220	189,720	372,686	203,702	252,625	223,146	320,865	324,191
Canada	750,904	716,332	1,193,870	659,000	871,098	719,219	1,136,485	436,000
Colombia .....	.....	24,173	91,968	27,532	.....	46,084	63,827	33,107
Cuba	*182,381	*562,039	437,294	140,064	*284,279	*294,515	855,138	164,309
Denmark	314,428	290,659	463,228	228,336	254,596	258,601	250,423	192,960
Egypt	191,970	213,706	372,884	132,893	215,812	139,972	312,809	154,223
Finland	85,385	76,676	140,365	95,612	96,358	72,478	113,236	78,126
France	1,959,800	1,766,100	3,493,280	1,625,932	1,836,119	1,616,438	1,882,587	1,327,087
Germany	1,475,695	1,433,140	1,708,722	2,563,199	944,860	856,800	1,202,990	2,403,086
Greece	77,946	98,535	237,180	34,480	51,745	48,765	73,916	22,952
Haiti *	10,719	12,000	27,398	8,100	12,350	5,000	19,000	11,300
Honduras *	14,180	16,197	14,120	7,500	5,967	5,224	7,623	4,646
India	699,132	883,680	807,564	520,992	833,161	675,384	1,269,696	797,040
Italy	723,074	537,156	793,200	704,064	447,552	339,012	390,000	486,370
Japan	895,772	782,460	1,179,360	365,268	779,140	602,784	979,776	317,364
Netherlands	780,010	756,228	1,147,584	1,575,036	470,085	641,016	586,176	1,239,368
Norway	127,565	217,938	498,465	148,052	No data	85,997	195,195	102,084
Peru	46,873	59,756	67,190	29,653	82,562	58,875	129,212	44,502
Philippines *	80,197	115,838	149,438	53,313	95,583	88,115	151,124	47,773
Rumania	No data	No data	170,568	113,872	67,731	85,861	63,741	121,002
Russia	125,000	No data	No data	708,000	32,000	No data	No data	783,000
Spain	**308,906	306,996	222,936	272,988	**140,992	146,871	162,641	230,637
Sweden	304,706	287,472	691,260	228,336	304,444	246,792	469,860	718,688
Switzerland	363,850	399,504	717,067	370,525	321,100	372,360	553,813	265,645
United K'dom	4,447,472	4,183,745	7,073,495	3,734,739	3,191,797	2,707,305	4,884,157	2,557,987
United States	3,184,000	2,509,000	5,278,000	1,793,000	3,831,000	4,379,000	8,080,000	2,484,000
Uruguay	34,154	27,180	49,812	52,075	61,492	48,082	93,514	70,839
Total	\$19,354,960	\$18,406,544	\$28,894,521	\$18,861,678	\$17,248,803	\$16,118,361	\$25,716,490	\$17,018,598

* Fiscal year tariff law valuation.

† Estimate, based on Austria-Hungary total.

‡ 1919.

** Nine months based on new

WORLD INTERNATIONAL TRADE 1910 TO 1921.*

	Total imports	Total exports	Average of imports and exports	World population†	Average commerce per capita
1910.....	\$10,500,000,000	\$9,600,000,000	\$20,100,000,000	1,543,000,000	\$13.02
1913.....	21,521,000,000	19,322,000,000	40,843,000,000	1,652,000,000	24.47
1914.....	19,408,000,000	18,351,000,000	37,760,000,000	1,661,000,000	22.73
1915.....	19,925,000,000	19,270,000,000	39,195,000,000	1,672,000,000	23.44
1916.....	23,492,000,000	23,030,000,000	46,523,000,000	1,692,000,000	27.50
1917.....	28,548,000,000	24,232,000,000	52,781,000,000	1,693,000,000	31.18
1918.....	34,928,000,000	27,873,000,000	62,802,000,000	1,699,000,000	36.96
1919.....	40,587,000,000	34,723,000,000	75,311,000,000	1,701,000,000	44.28
1920.....	32,899,000,000	28,518,000,000	61,417,000,000‡	1,830,000,000	*33.49
1921.....	21,500,000,000	19,500,000,000	40,100,000,000	1,860,900,000	*21.42

* Figures of total world trade are necessarily approximations, owing to lack of accurate reports of trade of certain minor countries and colonies.

† Based on average exchange values of the currencies of the respective countries. For earlier years the figures of the various countries are reduced to dollars at par of exchange.

O. P. AUSTIN, Statistician, National City Bank of New York.

WORLD PEACE FOUNDATION. See PEACE AND ARBITRATION, INTERNATIONAL.

WORLD WAR, Effect of, Upon Churches. See CHURCHES IN THE WORLD WAR.

WORLD WAR FOREIGN DEBT COMMISSION. See EUROPEAN DEBTS.

WRAGGE, Clement Lindley, New Zealand astronomer: b. Stourbridge, England, 18 Sept. 1852; d. New Zealand, 10 Dec. 1922. He was educated at the Uttoxeter Grammar School, travelled extensively, became devoted to scientific research, and joined the Surveyor-General's Department, Adelaide, in 1876. He established three observatories, chiefly for problems of climatology at different heights in the Churnet Valley and moorlands of Northern Staffordshire, established and worked Ben Nevis Observatory receiving a gold medal for this in 1881; also Torrens Observatory near Adelaide, in 1884; and Mount Lofty, South Australia, in 1884. He inaugurated the chief Australasian weather-bureau at Brisbane in 1887; established meteorological stations throughout Queensland; Mount Wellington (Tasmania) High Level Station; reorganized meteorological service of Tasmania in 1895; established Mount Kosciuszko Observatory, New South Wales, the highest point in all Australia, and the correlative low level station at Merimbula, 1897-98. In the practical pursuit of meteorology he went to Australia many times and traveled on the Continent of Europe, Syria, Palestine, Egypt, North America, India and the South Seas. He presented a collection of shells, native Australian weapons, etc., to the town of Stafford, where it is known as the Wragge Museum. In 1889-1900 he established Capemba Botanical Gardens near Brisbane. In 1887-1900 he was government meteorologist of Queenstown and scientific lecturer. In 1910 he settled in New Zealand and established the Wragge Scientific Institute Museum and Waiata Botanical Gardens. He was a member of many meteorological societies and attended various international meteorological congresses. He was a fellow of the Royal Meteorological Society, of the Royal Geographical Society and of the Royal Colonial Institute. Mr. Wragge published many papers and brochures on meteorological and other scientific subjects and 'The Romance of the South Seas' (1905).

WRANGELL ISLAND, an island off the coast of Siberia and 400 miles west of Bering Strait, in lat. 71° N. and long. 180° W. It was discovered by the British in 1849 and was alternately occupied by Americans and British, both of whom permitted their claims to lapse, neither country providing for continuous occupation. The island is a grass-covered Arctic prairie, with great inland granite cliffs, 2,000 feet high. Strategically the island dominates northeast Siberia. An expedition fitted out by V. Stefannson reached the island in 1921 and raised the British flag there, claiming the island for Britain. The outside world learned of the expedition in 1922 when the *fait accompli* was announced by Doctor Stefannson.

WRESTLING. Ed. "Strangler" Lewis regained the heavyweight wrestling championship from Zybiszko in 1922 and on 14 December at Saint Louis, Mo., successfully defended it against the same contender. By this second

victory Lewis won permanent possession of the Rickard belt, having been victorious in three contests in which the trophy was at stake. In the amateur field, the intercollegiate championships were won by Cornell with 19 points. The meet was held at Lehigh University, Bethlehem, Pa., 25 March. Penn State was second with 12 points and Yale third with 11 points. The National Amateur Athletic Union championships were held at Boston, 8 April. Winners of the final bouts were: 118 lb. class, Valentine Vozen; 126 lb. class, Andrew Callas; 135 lb. class, Robin Reed; 147 lb. class, Russell Vis; 160 lb. class, Emil B. Wolf; 175 lb. class, Paul Berlenback; 192 lb. class, Fred Meyers; Heavy-weight class, Fred Meyers. The International Amateur Championships were held at Stockholm on 7 March. Nilsson of Sweden won the final bout in the heavyweight class; other winners were: middleweight, class A, Westergren of Sweden; class B, Rosenkzist of Finland; lightweight, Westerlund of Finland; featherweight, Anttila of Finland; bantamweight, Svenssen of Sweden.

WRIGHT, Luke E., American public official: b. Giles County, Tenn., 1846; d. Memphis, Tenn., 17 Nov. 1922. He was the son of the Hon. Archibald Wright, Chief Justice of Tennessee and at the age of 15 joined the Confederate Army and served under Breckenridge's command. After the war he studied law, was admitted to the bar of Tennessee, and practised law in Memphis. For eight years he was Attorney-General of Tennessee. His achievement in supervising relief work in Memphis during the yellow fever epidemic in 1878-79 was extraordinary. Although the town was under military control, he made himself Mayor and took charge of the relief measures. He was stricken with the plague, but recovered and lived to see Memphis, through the hygienic measures he introduced, become a model health city. President McKinley appointed him a member of the second Philippine Commission, and in 1903-04 he was its president. In 1904 President Roosevelt appointed him civil governor of the Philippines, and in the same year he was appointed Governor-General to succeed William H. Taft. In 1906 he was appointed by President Roosevelt the first American Ambassador to Japan, but after a year's service, he resigned and returned to his law practice in Memphis. In June, 1908, he was appointed Secretary of War by President Roosevelt, serving until 1909. In politics he was a Gold Democrat. His wife was a daughter of Admiral Raphael Semmes.

WU TING-FANG, Chinese diplomat: b. Hain-hui, near Canton, China, in 1842; d. Canton, 23 June 1922. This brilliant Chinaman will stand in time to come as one of the most gifted personalities of the Nineteenth Century. Few diplomats in Washington have been more popular and more highly respected. He possessed the great culture of China, its humor and wisdom and a great gift of oratory, which made him a much sought for public speaker. His early education was among the sons of merchant princes and in early manhood he went to London, where he studied law. In his own words: "I did not study at Oxford, as some papers say, but at Lincoln's Inn, London,

where I was admitted to the bar. I then returned to Hongkong, and was practising law when appointed by Li Hung Chang to his Ministry. I served under him 15 years when he was Viceroy of Chi-li and saw him every day. Naturally he learned to know me pretty well." Doctor Wu is said to have been the discoverer of the great Li Hung Chang, but, at any rate, he became his legal adviser and foreign deputy as early as 1882. One of his greatest public services was the construction of the first railway in China, about 100 miles long, between the mines of Taiping and the port of Taku. He was also the first president of the Imperial University at Tientsin. At the end of the Chinese and Japanese War of 1894-95, he went on the first peace mission to Japan as secretary and became in a short time plenipotentiary. The great talents he showed on this occasion for diplomacy led to his being sent to Washington, 1 May 1897. His assignment also included Spain and Peru. In 1900 he visited Madrid, but he did not go to South America until his Washington mission had ended. Although 20 years have passed since Doctor Wu's five, or more, years residence in Washington, his memory has not faded. His wife and their three children shared his popularity and his house at New Hampshire Avenue and Q Street was besieged by photographers and writers. The many Chinese officials in his suite were much in evidence and Wu Ting-Fang himself was frequently seen mounting his bicycle for a ride through the streets of Washington. When the bicycle craze died out, he was one of the first to purchase an automobile. When the Revolution of 1912 turned China, the oldest of monarchies, into a republic, Wu Ting-Fang labored hard for unity and espoused the cause of Canton. He always considered himself a Cantonese; and when he was invited by the Peking Government to be one of the delegates to the Washington Conference in 1921 he declined the honor. In 1916 he was made Foreign Minister of the Canton Government and held this post until late in 1921. In 1917 he was also for a time Premier. In May, 1921, he succeeded General Chen as Civil Governor of Kwantung and was mentioned as Foreign Minister in the all-China Cabinet which President Li Huan-hung was trying to form, and on 11 June he was mentioned for Premier. On 13 June he was reported to have fled from Canton with Doctor Sun and later to have been with Sun on the way to Shanghai. Doctor Wu endeavored to enlighten Americans as to the true situation in China, by means of documents, articles and cablegrams, during the last year of his life.

WYETH, John Allen, American surgeon: b. Missionary Station, Ala., 26 May 1845; d. New York City, 28 May 1922. He acquired a preliminary education at LaGrange Military Academy, and was graduated with the degree of M.D. from the University of Louisville in 1869 and from Bellevue Medical College in 1873. From 1873-74 he was assistant demonstrator in anatomy and from 1880-97 was professor to the chair of anatomy and surgery at Mt. Sinai Hospital, New York. In 1882 he organized and founded the New York Polyclinic Medical School and Hospital—the first post-graduate

medical school established in the United States—becoming professor of surgery therein and president of the faculty thereof, positions held by him until his death. During the Civil War Doctor Wyeth served as a private in the Confederate States Army and for 15 months was a prisoner at Camp Morton, Ind. He was president of the New York Pathological Society, 1885-86; of the New York State Medical Association, 1901; of the American Medical Association, 1902; of the New York Academy of Medicine, 1907-08, and of the Southern Society of New York, 1907. He published 'Essays on Surgical Anatomy and Surgery'; 'Textbook on Surgery'; 'Life of Gen. N. B. Forrest'; 'With Sabre and Scalpel, The Autobiography of a Soldier and Surgeon' (1914); also many medical, historical, and biographical sketches.

WYLIE, Walker Gill, American surgeon: b. Chester, S. C., 2 Sept. 1848; d. New York City, 13 March 1923. At the age of 16 he enlisted in the Confederate Army and commanded a company of boys in active service in 1864-65. After the close of the Civil War he matriculated at the University of South Carolina from which he was graduated A.B. in 1868. He then entered Bellevue Medical College (New York University) and received his M.D., in 1871. He served for some time as house surgeon at Bellevue Hospital and thereafter as house surgeon at the Woman's Hospital of the State of New York. He then went abroad to study nursing systems and upon his return submitted a report which resulted in the establishment at Bellevue Hospital of the first training school for nurses created in the United States. Doctor Wylie was appointed visiting gynecologist at Bellevue in 1882 and during the same year assisted in founding the Polyclinic Hospital and School of Medicine, becoming professor of gynecology therein. He was a member of numerous medical societies, including the American Gynecological Society and the Royal Society of Medicine in London. He published 'Hospitals, their Organization and Construction' (Boylston prize essay, Harvard, 1876) and numerous articles on surgery and gynecology.

WYNNE, Robert John, Postmaster-General in President Roosevelt's Cabinet: b. New York City, 18 Nov. 1851; d. Washington, D. C., 11 March 1922. He was educated in the public schools of his native city and worked as a telegrapher from 1870 to 1880 when he became Washington correspondent for the *Cincinnati Gazette*. He held the latter position until 1892 when he was made private secretary to the Secretary of the Treasury. This secretaryship he held until 1896 when he returned to journalism, serving as Washington correspondent of the *New York Press* until 1902, when he was made First Assistant Postmaster-General. Upon the death of Postmaster-General Payne in 1904, President Roosevelt appointed Mr. Wynne to fill the vacancy. He held the post until the change of administration in 1905, when he was appointed Consul-General at London. The latter position he resigned in 1910 and returning to Washington was made president of the First National Fire Insurance Company of the United States in 1915. He was a

member and ex-president of the Gridiron Club and member of the Army and Navy, National Press, and Columbia Country Club.

WYOMING, a Rocky Mountain State, bounded north by Montana, east by North Dakota and Nebraska, south by Colorado and Utah, and west by Utah, Idaho and Montana. Its area is 97,914 square miles and in 1920 it had a population of 194,402. The State ranks eighth in order of size and 47th in order of population. Of the population in 1920, 190,146 were whites, 1,538 were Asiatics, 1,375 negroes and 1,343 Indians. The foreign-born numbered 25,575 and included 2,292 Germans, 2,505 English, 2,042 Swedes, 1,948 Italians, 1,439 Scotch, 1,438 Canadians, 1,236 Greeks, and 956 Irish. Within the State there are Indian reservations with an area of 2,901 square miles and a population of 1,748. Seventy and five-tenths per cent of the total population was rural in 1920. The chief cities of the State, with their populations in 1920, are: Cheyenne, the capital, 13,829; Casper, 11,447; Sheridan, 9,175; Rock Springs, 6,456 and Laramie, 6,301.

Religion.—The principal Christian denominations have an aggregate membership of 39,505, of whom 12,801 are Roman Catholics, 4,293 Methodists, 3,890 Episcopalians, 2,514 Presbyterians, 1,951 Congregationalists, 1,841 Baptists and 704 Lutherans.

Education.—There are in the State 477 public schools with 1,950 teachers and 43,077 pupils, 88 high schools with 282 teachers and 4,476 pupils, and for higher education there is the University of Wyoming.

Finances.—The following shows the State finances for the two-year period 1 Oct. 1920–30 Sept. 1922:

Cash balance 1 Oct. 1920	\$2,120,347 70	
Receipts, first year.....	\$9,851,277 50	
Receipts, second year.....	9,844,174 74	
Investments repaid.....	19,695,452 24	
Disbursements, first year.....	1,546,831 16	
Disbursements, second year.....		
.....	7,130,490 07	
	\$14,030,209 27	
Investment made for permanent funds.....	4,040,320 64	
Cash and in banks, 30 Sept. 1922.....	5,292,101 19	
	\$23,362,631 10	\$23,362,631 10

Agriculture.—Wyoming is mostly a broad plateau. The State has a mean elevation of 6,000 feet. Much agriculture is carried on by irrigation and so-called dry farming methods. In 1920 the census reported 15,611 farms and a total value of all farm property of \$167,189,081. The wool clip in 1920 was 28,422,000 pounds. The chief crops, with their acreage, yield and value for the year 1922, were: corn, 65,000 acres, 1,560,000 bushels, \$936,000; spring wheat,

142,000 acres, 2,414,000 bushels, \$1,979,000; winter wheat, 38,000 acres, 646,000 bushels, \$530,000; barley, 10,000 acres, 310,000 bushels, \$186,000; oats, 158,000 acres, 5,056,000 bushels, \$2,022,000; rye, 21,000 acres, 294,000 bushels, \$153,000; tame hay, 710,000 acres, 1,349,000 tons, \$11,466,000; potatoes, 23,000 acres, 2,530,000 bushels, \$1,265,000; and apples, 45,000 bushels. Stock raising is the most important industry, and the State ranks second in sheep raising. On 1 Jan. 1923 there were in the State 198,000 horses, valued at \$6,534,000; 3,000 mules, valued at \$174,000; 46,000 milk cows, valued at \$3,082,000; 835,000 other cattle, valued at \$25,634,000; 2,396,000 sheep, valued at \$21,564,000, and 84,000 swine, valued at \$1,050,000.

Other Products.—About 8,000,000 acres of the State are covered with timber. Its mineral resources are extensive. The coal output in 1922 was 5,800,000 tons, and that of petroleum 26,232,000 barrels. Copper is also produced on an extensive scale. Other mineral products are gold, silver, iron ore, platinum and the base minerals. Manufactures are not extensive and are confined largely to the production of articles for home consumption. The chief manufacturing industries are railroad repair shops, lumber and timber, flour and grist mills, dairy products, etc.

Communications.—There are no navigable rivers within the State. The railroad mileage is 1,931 miles. There still remain several stage routes. The Yellowstone National Park in the northwest corner of the State is attracting greater and greater numbers of tourists each year.

Government.—The State executive is a Governor, elected for four years and who receives a salary of \$6,000. The legislature consists of a Senate of 25 members, who are elected for four years, and a House of Representatives of 54 members, who are elected for two years.

State Officials.—(1923) Governor, William B. Ross; Secretary of State, F. E. Lucas; Attorney-General, David J. Howell; Auditor, Vincent Carter; Treasurer, J. M. Snyder; and Superintendent of Education, Mrs. Katherine A. Morton.

Judiciary.—Members of Supreme Court: Charles N. Potter, Chief Justice; Ralph Kimball and Fred H. Blume, Associate Justices.

WYOMING, University of, a State co-educational institution founded in 1886 and located at Laramie, Wyo. In 1922–23 it had a faculty of 111 members including administrative officers, librarians, teaching staff, research workers, training school teachers, and resident extension staff. Its student enrollment was: 657 in the college, 800 in the summer school, and 838 taking correspondence study. The institution's property was valued at \$1,506,300 as of 1 July 1922 and its income for the same year was \$861,153.39. Arthur Griswold Crane, Ph.D., is president.

Y

YACHTING. See **SPORTS.**

YALE UNIVERSITY, a non-sectarian educational institution for men (women admitted to graduate and professional schools), founded in 1701 and located at New Haven, Conn. In 1922-23 it had a total faculty membership of 452, including professors, associate professors, instructors, etc., a student enrollment of 4,362, property valued at \$21,000,000, endowment funds amounting at \$32,662,011 and an income of \$3,098,549. James Rowland Angell, Litt.D., LL.D., is president.

YAMAGATA, yā-mā-gā'tā, **Aritomo**, PRINCE (early name KYŌSUKE), Japanese soldier and statesman: b. Chōshū (or Nagato) province, 22 April 1838; d. Odawara, Japan, 1 Feb. 1922. He was educated by the patriot, Shōin Yoshida; was active in the overthrow of the Shogunate, and was made second vice-minister of war under the new government. In 1869 he visited Russia and France for study of their military institutions. In 1876-77 he ably directed the Satsuma rebellion campaign, in 1878 was made commander of the imperial guard and chief of the general staff. He was Prime Minister in 1889-91, in which post he greatly strengthened the army and navy; and Minister of Justice in 1891-93. He was appointed to command the first army corps in the war with China in 1894, and quickly expelled the Chinese from Korea. His policy was throughout one of study of Western methods. He was a skilful strategist, and was made field-marshal in 1898, receiving also the title of marquis. He was again Prime Minister in 1898, and was chief of staff in the Russo-Japanese War. He became president of the Privy Council in 1905, and was raised to the rank of prince in 1907.

YANKTON COLLEGE, a non-sectarian co-educational institution, founded in 1881 and located at Yankton, S. Dak. In 1922-23 it had a faculty of about 24 members, 284 students, property valued at \$325,976.35 and an estimated income of \$62,750. Henry Kimball Warren, LL.D., is president.

YAP, an island of the Caroline Group in the Pacific Ocean, formerly a German possession, and now under mandate to Japan with certain cable rights reserved to the United States. There are 76 Japanese on the island, 8,537 natives and three Europeans. It is an important cable centre, several lines crossing here. See also **WASHINGTON CONFERENCE.**

YEATS, John Butler, Irish artist and author: b. Tullylish, County Down, Ireland, 16 March 1839; d. New York City, 3 Feb. 1922. He received his preliminary education at Athol Academy and thereafter was graduated from Trinity College, Dublin. Subsequently he studied law and was called to the Irish bar in 1866, but he never practised. In 1868 he went to London where he studied art. About 10 years later he returned to Dublin and opened a studio, which was a general gathering place for artists and writers. It was while occupying this Dublin

studio that he compiled a little volume of poems entitled 'Songs and Ballads of Young Ireland' to which William Butler Yeats, John Todhunter, Katharine Tynan, Rose Kavanagh, and T. W. Rolleston contributed. There also was designed the *Dublin University Review* which, however, had no connection with the university and was formally disowned by that institution. In 1887 Mr. Yeats removed to London where he did a great deal of excellent work in black and white — especially notable being his series of illustrations in sepia drawing for Dent's edition of De Foe. In 1902 he again returned to Dublin where he painted many portraits of interest. It was in 1908 that he went to New York, intending to remain only a few weeks but remaining instead until the end of his days. Always he kept saying that he intended to go back home and only a short while before his death the Arts Club of Dublin made him an honorary member so that he would not feel himself a stranger when he did return. Mr. Yeats left a great deal of work of a high artistic order. The list comprises a mass of book illustrations in black and white, a number of early paintings done in the Pre-Raphaelite tradition but in a manner suggestive of a later school, and a series of very beautiful portraits. Other works include drawings of the creators of the Irish Literary Revival — William Butler Yeats, the artist's son; John Millington Synge, and Padraic Colum; portraits in the Abbey Theatre, Dublin, of Maire Nic Shiubhlaigh, Miss Horniman, and Willie and Frank Fay; portraits in the Dublin Art Gallery, especially his magnificent crayon drawing of Isaac Butt and his head of John O'Leary, together with many beautiful pictures in private collections. His publications include 'Extracts from Letters by John Butler Yeats, R. H. A.,' edited by Ezra Pound; 'Further Letters of John Butler Yeats,' edited by Lennox Robinson; 'Essays, Irish and American,' and articles in American and Irish papers. At the time of his death he was painting a portrait of himself which he believed would prove to be his masterpiece.

YELLOW FEVER. See **MEDICINE AND SURGERY, ADVANCEMENT OF; PUBLIC HEALTH SERVICE, UNITED STATES; ROCKEFELLER FOUNDATION.**

YEMEN, Imamate of. See **ARABIA.**

YORK COLLEGE, a non-sectarian co-educational institution, founded in 1890 and located at York, Neb. In 1921-22 it had a faculty of 23 members, 457 students and property valued at \$146,000. Income figures not given. Hervia U. Roop, Ph.D., LL.D., L.H.D., is president.

YOUNG MEN'S CHRISTIAN ASSOCIATION, a world wide organization working under independent National Committees in 30 different lands. Representatives of these national associations form the World's Committee, with headquarters at Geneva. Besides these countries where associations have long been established, the work of the American associations with

troops in the World War led to requests for its introduction into many European countries where it had not before been known. The organization in these lands began with the work for the still mobilized soldiers and for prisoners and refugees and is being developed largely by native secretaries into civilian associations with their varied activities, although these are not yet (1 Dec. 1922) organized under independent national committees and still have advisory staffs of American secretaries with some financial aid. The central body of the North American Young Men's Christian Association is the International Committee which deals in an organizing and advisory capacity with the local associations of Canada and the United States, and aids in the development of the organization in foreign lands. The following data is that of the North American associations only.

According to the last year book, there are 1,978 local associations with a membership of 883,169, not including the thousands of men and boys who use the buildings and various advantages open to non-members. These local associations are combined under 47 provincial and State committees and five regional boards. The International Committee is elected at the triennial conventions and consists of about 200 volunteer business and professional men from every part of Canada and the United States. There are three schools for training association secretaries, with summer schools at 10 camps. Special courses in preparation for association work are given at Yale Divinity School and at universities in Toronto and Montreal.

The aim before the Association is the enlisting of young men and boys in the service of the Evangelical church, the community, and other young men. The local associations seek to provide religious services; educational opportunities; athletics and physical training; social rooms and entertainments. The work falls naturally into various departments as Army and Navy, Railroad, Merchant Marine, College, City, Town and Country, Indian, Colored, and Industrial. In the large cities dormitories and cafeterias are often part of the equipment. The Industrial Department works in the mining and oil regions, lumber camps and shops. A program of athletics, entertainments and classes is often carried on where the Association has no quarters.

Student and City Associations for colored men number 173 with 119 colored secretaries. What promises to be work of very great value in this field is that of the Inter-Racial Commission which was organized directly after the Great War by Southern men and women of both races and of high standing in their communities. Under this commission local committees are working in hundreds of communities throughout the South for real co-operation and mutual understanding between the races. Although welfare work for the army and navy within government reservations is now taken care of by War and Navy Departments, the Association has 34 stations at home and in the Canal Zone, at Hawaii, the Philippines, in China, and at Constantinople. Merchant marine branches have been opened at 11 ports. Those outside this country are Havana, Yokohama, Hamburg, Le Havre, London, and Liverpool. These associations for Americans away from home have taken

on a valuable international character making for friendliness between the men of various countries gathered in foreign lands. The United Y Schools is a development, since the war, of the classes that have always been a part of Association activities. In these schools, in which 129,779 students are now studying, the courses are co-ordinated, and recognized certificates and degrees conferred. Ninety per cent of these students are earning their own living. Fifty of the schools carry collegiate work and 20 of them under State departments of education have the right to grant college degrees. In the past two years \$5,000,000 has been spent in scholarships to 95,000 ex-service men. Correspondence courses were organized in 1920 and have proved of wide usefulness, the enrollment in the past two years having been 30,000. The same courses are used in this correspondence work as in local association schools. Student Associations are organized in 516 colleges and universities with a membership of 81,860. These Student Associations have always been actively interested in the work for the young men in other lands and in 1922 aided the World's Student Christian Federation in its care of destitute students in Europe to the amount of \$343,625.

The work for boys from 12 to 18 years has grown rapidly in the past few years, and they now constitute over 25 per cent of the Association's membership. Boys' Departments are reported by 811 associations. Over 1,800 Hi-Y clubs are organized and have an enrollment of 53,165 high school boys who are united "to create and maintain and extend throughout the schools and communities high standards of Christian character." The Town and Country department is also largely concerned with these junior members and work is carried on in 158 counties in 19 States and provinces. It is a non-equipment program, which aims to bring to the boy of the country, often in isolated regions, the advantages of work and play in groups, and which strives to strengthen and make the most of all forces for good already existing in rural communities. Under the International Committee 293 American secretaries are aiding the development of the organization in 27 different nations and colonies in all parts of the world, and working with the hundreds of thousands of Russian refugees who are scattered in nearly every country of Europe. The officers of the International Committee as appointed at the Convention in November, 1922, at Atlantic City, to serve for the next three years, are Chairman, Alfred E. Marling; Executive Secretary, John R. Mott; Treasurer, B. H. Fancher. The headquarters of the International Committee is at 347 Madison Avenue, New York City.

IRVING SQUIRE,
Bureau of Information.

YOUNG MEN'S CHRISTIAN ASSOCIATION COLLEGE. International, a non-sectarian educational institution for men, founded in 1885 and located at Springfield, Mass. In 1922-23 it had a faculty of 25 members, 412 students; property valued at \$1,000,000. Income figures for 1922-23 not given but for 1921-22 they were \$131,610. Lawrence L. Doggett, D.D., is president.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. The Young Women's Christian Associations in the cities, the colleges, and the rural communities of the United States are organized into a national association called the Young Women's Christian Association of the United States of America. The purpose of the organization is to "advance the physical, social, intellectual and spiritual interests of young women and to promote growth in Christian character and service, and to become a social force for the extension of the Kingdom of God." The National Board is the executive body of the organization chosen to carry out the policies adopted by the voting delegates at the national conventions which are the regular business meetings of the National Association. The conventions are held biennially in April. The officers of the Association (1 Jan. 1923) were: Mrs. Paist, of Philadelphia, Pa., president; Mrs. John Hanna, Dallas, Tex., and Mrs. C. R. Wilson, Detroit, Mich., vice-presidents; Mrs. E. B. Kinsworthy, Little Rock, Ark., and Miss Marjorie Collier, Colorado College, secretaries. The officers of the National Board (1 Jan. 1923) were: President, Mrs. Robert E. Speer; Chairman of the Executive Committee, Mrs. John French; Secretary, Miss Katharine Lambert; Treasurer, Mrs. Samuel J. Broadwell; General Secretary, Miss Mabel Cratty.

The National Board operates through its headquarters and five regional offices. The headquarters building and National Training School are located at 600 Lexington Avenue, New York City. The regional offices are in New York; Saint Louis, Mo.; Chicago, Ill.; Denver, Colo.; San Francisco, Calif.; Atlanta, Ga. This Board interests itself in the city, student, town and country associations throughout the United States and its territories, and, through its Foreign Division, it works with other members of the World's Committee of the Young Women's Christian Association in carrying on Association work for the women and girls in Europe, the Near East, the Orient, and

South America. Work in Oriental countries is undertaken by the Association only upon the invitation of the Mission Boards working in such countries. At the close of 1922 work was being carried on under this department in 15 countries, with a staff of 224 secretaries.

There were in the United States at the close of 1922 1,152 affiliated Young Women's Christian Associations, with 280 branches; 584,000 members and real property valued at over \$25,000,000. The gross budgets of local Associations for 1921, were approximately \$22,000,000, about 75 per cent of which was met by earnings from cafeterias, boarding homes, etc. The expenditures of the National Board in 1921 upon its regular work were \$2,679,245, of which \$299,821 was used for the promotion of work in China, Japan, India and South America. The endowment of the National Board yields, approximately, \$100,000 annually while its income producing features in 1921 brought in \$813,524. Contributions from Associations and individuals totalled \$1,242,872.

Under the Continuation Committee of the National War Work Council there was carried on during 1921 certain war work of post-war significance, which was financed out of the balance of sums originally appropriated for this work from war work funds.

YUKON, a Territory of the Dominion of Canada, bounded west by Alaska, south by British Columbia, east by the Northwest Territories and north by the Arctic Ocean. Its area is 207,076 square miles and its population in 1921 numbered about 8,000. Dawson, the capital, has about 2,500 inhabitants. White Horse, the second large centre, has about 700 inhabitants. Mining of gold, silver, copper, and coal is the chief occupation of the inhabitants. The Territory is governed by a Gold Commissioner and a Legislative Council of three members. Gold Commissioner in 1922: George P. MacKenzie; Territorial Secretary, J. A. M. H. Maltby.

Z

ZANZIBAR, a British African Protectorate comprising the island of Zanzibar in 6° south Latitude and separated from the mainland by a channel 23 miles wide at its narrowest point. The island has an area of 640 square miles. Pemba, with an area of 380 square miles, is under the same administration. Zanzibar has a population of 113,624 and Pemba, 83,109. There are 270 Europeans, mostly English. Zanzibar, the chief town and port, has a population of 35,000. Most of the natives are Mohammedans of the Sunni sect. There are three Christian missions, which maintain several schools. The government also maintains several free schools but attendance is voluntary. Several sects maintain special schools. There are 2,241 children attending school. Revenue in 1920 amounted to £330,113 and expenditure to £403,808. The public debt amounts to £100,000. The production of cloves is the chief industry of the Protectorate and the bulk of the world supply comes thence. The output in recent years averages 14,000,000 pounds. The cocoanut industry is next in importance. Copra was exported in 1920 to the extent of 12,654 tons. Local manufactures include pottery, rope, coir fibre, soap, oil and mats. Exports in 1920 were valued at £3,011,180 and imports at £2,738,095. The reigning Sultan in 1922 was Seyyid Khalifa bin Harub. The Government is administered by a High Commissioner and a British resident. Legislation consists of British and Indian statutes and decrees of the Sultan when countersigned by the British resident. High Commissioner in 1922, Maj.-Gen. Sir Edward Northey; British resident, J. H. Sinclair.

ZENTRALVERBAND DEUTSCHER KONSUMVEREIN. See CO-OPERATIVE MOVEMENT, sub-section, GERMANY.

ZINC. See LEAD AND ZINC.

ZIONIST ORGANIZATION OF AMERICA. This organization is the American branch of the World Zionist Organization, which has as its aim "To establish a publicly recognized and legally secured home for the Jewish people in Palestine." The Zionist Organization of America with its headquarters in New York City (114 Fifth Avenue), has over 250 branches throughout the United States. The following Zionist bodies carrying on Zionist work are affiliated with it: (1) The Hadassah, the women's branch of the Zionist Organization, which helps maintain the organization of the American Zionist Medical Unit in Palestine; (2) The order, Sons of Zion, a fraternal and benefit organization, consisting of a purely Zionist membership; (3) The Young Judaea, a junior organization, having more than 1,000 clubs for children and youth; (4) The Zeire Zion of America, an organization of young men, whose program expresses the more progressive and radical tendencies in Zionism; (5) The Inter-collegiate Zionist Organization, which consists of students and college graduates.

The Zionist Organization carries on its activities through (1) The Keren Hayesod (The

Palestine Foundation Fund), which collects donations from the Jews of America for the purpose of settling pioneers on the land, for sanitation work, for general health and hospital work, for the care of immigrants and for the maintenance of elementary and intermediary Jewish schools; (2) The National Fund, which collects funds for the purpose of acquiring land for agricultural settlement; the land to be held in perpetuity in the name of the Jewish people.

The Zionist Organization of America also promotes the larger undertakings of Palestine, such as the Rutenberg Concession for the hydro-electrification of the country, and the floating of such securities which are in the nature of public utilities for the general benefit of the country. The organization has a direct affiliated membership of 32,000 grouped in district or local organizations. It carries on its propaganda through speakers, and through its two official organs, the *New Palestine* (in English) and *Dos Yiddishe Folk* (in Yiddish). It further subsidizes the Hebrew monthly *Hatoreh*, and the English monthly for children, the *Young Judaea*. The Zionist Organization also maintains a Palestine Department which collates and distributes information with regard to the industrial and agricultural resources of Palestine, and helps travelers going to Palestine obtain their passports and visas.

The outstanding events of American Zionism in 1922 were: (1) The Zionist resolution adopted unanimously by both houses of Congress reading as follows: "Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the United States of America favors the establishment in Palestine of a national home for the Jewish people, it being clearly understood that nothing shall be done which may prejudice the civil and religious rights of Christian and all other non-Jewish communities in Palestine, and that the holy places and religious buildings and sites in Palestine shall be adequately protected." This resolution was approved by President Harding on 21 Sept. 1922; (2) The Ratification of the Palestine Mandate. The unanimous passage of the Zionist resolution which was brought about by the efforts of the Zionist Organization of America, greatly facilitated the ratification of the mandate by the League of Nations, whereby Great Britain became the mandatory power for Palestine. The mandate embodies the famous Balfour Declaration issued in 1917 by the British Government; (3) The collections of the Keren Hayesod or the Palestine Foundation Fund during 1922 of over \$2,000,000, which were transmitted to Palestine for the purposes indicated above; (4) Through the initiative of the Zionists, the Jewish physicians, druggists, and dentists, organized themselves for the purpose of establishing a Hebrew University in Jerusalem, and raised in 1922 \$400,000 for this purpose.

The administration of the Zionist Organization is lodged in the National Executive Committee which is annually elected by a convention

composed of delegates from the various Zionist districts. While the National Executive Committee is responsible for the general policy of the Organization, its immediate affairs are supervised by an Administrative Committee consisting in 1922 of Herman Conheim, Abraham Goldberg, Boris Grabelsky, Emanuel Neumann, Louis Robison, Morris Rothenberg, and Jacob Siegel. Mr. Louis Lipsky is the Chairman of the National Executive Committee.

HARRY SACKLER,
Secretary.

ZONING. See CITY PLANNING AND ZONING.

ZOOLOGICAL PARK, National. See SMITHSONIAN INSTITUTION.

ZOOLOGY. The year 1922 will be distinguished in the history of zoology less in respect to startling additions to our knowledge of the structure and habits of animals, or by the announcement of some novel generalization, than for its extraordinary breadth of research. This is especially true of field-work and its product, which has furnished a vast amount of new materials for study in laboratories, and for exhibition in museums as a means of popular scientific education. This material has been gathered in most cases from remote regions, heretofore little explored zoologically; and the field-notes of the specialists engaged, filled with information obtained by personal observation of wild creatures in their native domains, have already proved most enlightening, especially in the provinces of ecology and zoogeography. An example is the discovery by Dr. Frank M. Chapman that the bird-fauna (and presumably that of the adjacent ocean) of the equatorial West-Coast region of South America is decidedly different from that south of Cape Paríria. The explanation is that south of this most westerly extension of the coast-line the cold Humboldt Current exerts an influence unfavorable to the fauna north of it, but favoring a different assemblage of animals south of that Cape, where the Humboldt Current glances out to sea. It is another example of the influence of temperature on animal distribution.

The establishment of the Tropical Research Station of the New York Zoological Society at Kartabo, British Guiana, has been enlarged in both its staff and its facilities. Its purpose is mainly the intensive study of the extremely prolific but poorly understood life of the American tropical forest as compared with the tropics of the Old World; but incidentally it has been able to supply to the Zoological Park in New York living animals never seen in the north before, such as certain monkeys and sloths. In this connection may be recorded the remarkable feat of the Society in importing, during this year, and exhibiting for six weeks at the Park, a living male duckbill, or ornithorhynchus, from Australia—a rare and strange little protothere not before seen in the United States and possibly never to be seen here again in life. The Kartabo station has already proved of great importance, and the outcome of its investigations have been published from time to time in the Society's valuable *Bulletin*.

This year witnessed the beginning of an extensive and most promising advance in zoological inquiry in another almost untouched field.

The reference is to the Third Asiatic Expedition, conducted by Roy Chapman Andrews for the American Museum of Natural History and the Asiatic Society. Two former expeditions under the leadership of Mr. and Mrs. Andrews, in southern China and India, have been in the nature of a preparatory reconnaissance, although rich in results. The designated field for 1922 was western Mongolia, and extraordinary preparations were made for work in that distant and difficult region. Heretofore camels and horses have been the only means of travel and transport; but this expedition was provided with automobiles as well, and carried the supplies and transported the collections in powerful motor trucks. The collections of native animals of all sorts soon passed all expectation, many of them of unnamed species. The principal attention, however, was given to the discovery and examination of fossiliferous rocks, since the geology of the interior of high central Asia is almost unknown. Strata of Cretaceous and Tertiary ages were found to be widespread in the Gobi region, and to abound in fossil remains of mammals and reptiles, including dinosaurs of huge size and novel characteristics. It is impossible at the present writing to speak descriptively of the results of this investigation, for neither detailed reports nor the cases of specimens have reached the United States, or at any rate have not been made public, but there is no doubt that they will throw much light on some vexed questions especially in paleontology.

A secondary outcome of great interest connected with this expedition is the proposed foundation of a natural history museum in Peking. Mr. Andrews had an audience with the President of the Republic of China, presented him with a set of photographs of the Museum in New York and its exhibits, and secured his cooperation in the effort to obtain one of the buildings in the "forbidden city" of Peking for the purpose. The Government of China has given much aid to Mr. Andrew's work.

Two expeditions to Ecuador have already given the American Museum large amounts of fresh material for exhibition and study. One of them was conducted by the eminent ornithologist Frank M. Chapman, and it spent several months in the mountains and forests of the western slope of that country, studying and collecting the birds, and photographing their haunts and nesting places. One general observation by these bird-hunters has been mentioned: another is the surprising fact that North American shore-birds are present along the Ecuador coast and southward in July, and in great numbers. The work of this season extends and correlates the studies previously made by Doctor Chapman in Colombia and the northern Andes.

The Field Museum in Chicago has also directed its attention this year to the zoology of the Pacific side of South America, and has sent a party of students under the direction of the veteran collector, Wilfred Osgood, to Chile. This party is working in the neighborhood of Ancud, Chile Island, and Corcovado Gulf, a region which has been little exploited by scientists. One object is to send or bring back living animals, especially the little hornless deer, pudu, which has not been seen in any of our zoological gardens.

Ecuador was visited in 1922 by another agent of the American Museum, G. H. H. Tate, for the purpose of collecting specimens and information of its quadrupeds, including amphibians and reptiles as well as mammals. Mammals, however, were Mr. Tate's chief concern, and he sent home in the summer skins and skeletons of more than 300 species of this class alone, including one species new to science and several others of great rarity—an astonishing performance. Among his prizes were three specimens of the mole-like marsupial *Cænolestes*, which is the only marsupial outside of Australasia except our opossums. Its existence here, coupled with its primitive structure, makes it exceedingly interesting in its bearing on the question of a possible antarctic land-union of South America with an Australasian continent.

Ever since naturalists had their attention called to the necessity of taking into account the peculiarities of the fauna of islands in considering the general subject of the geographical distribution of animals—one of the most important and fertile aspects of natural history—these isolated fragments of land have had a special interest for evolutionists, and several investigations this year have been directed toward the subject. An indication of some of the curious facts in respect to insular faunæ it may be mentioned that Professor Cockerell, of New York, reported that he found during the past summer in the Madeira group that each of several small islets, even when separated by less than half a mile of water, had one or several distinct species of snail. Similar conditions prevail in the Sandwich Islands.

An expedition financed by the American Museum of Natural History is engaged in searching the South Sea archipelagoes for desirable exhibition material, and is reported as having amassed extensive and varied collections. As these men have a vessel of their own they are able to visit and examine small and little known islands, thus adding to the general stock of information, and obtaining specimens of things that have become rare in the large islands, and of transporting them safely. Santo Domingo has been the scene of similar labors during the past year by Mr. and Mrs. G. K. Noble of the same Museum's staff, who are in search of reptiles and amphibians, particularly specimens of, and information about, the Dominican rhinoceros-iguana—a lizard four feet long, with a short horn on the tip of its snout. Its home is in the arid district of the southwestern part of the island, where, unlike most of the iguanas, it is wholly terrestrial, inhabiting burrows apparently

of its own digging. Another creature peculiar to Santo Domingo of which little is known is the giant tree-frog. Specimens of both these rarities will be exhibited in the Museum's new Hall of Reptiles and Amphibians which is now in preparation, and the completion of which will make a notable addition to the educational service of the institution. The only way to make such a collection of exhibits, not to speak of laboratory uses, truly representative of any animal group and of its geography, is to send trained observers and collectors to whatever "ends of the earth" may be necessary. This is the motive of the collecting-trip to East Africa to be made just now by Dr. and Mrs. James B. Clark.

An important movement in 1922 was an expedition, provided by several California institutions, whose delegates, in co-operation with Mexican naturalists, visited the Guadalupe Islands which lie off the coast of Lower California. The special object was to learn about and enumerate the elephant-seals still resident on those remote and sea-bound islets. Several hundreds were found—all old males, as tame as cows—but no females or young; and the puzzle as to the pelagic range of these creatures, and their general habits remains unsolved. Besides interesting collections, information was gained in this reconnaissance that enables the Governments of the United States and of Mexico to combine in measures protecting these seals from destruction by conscienceless hide-hunters.

The United States Biological Survey has continued through the year, in co-operation with State officials, its systematic campaign against predatory animals that infest ranches and farms in the wilder parts of the West; and it has met with great success, especially in the extermination of wolves, which have lately been actually decimating (by killing the young) flocks and herds among and near the mountain ranges. The killing off of these and the lesser natural enemies of the various gophers, ground-squirrels, and mice that prey on crops and orchards has, however, permitted these pests to agriculture to increase, so that an accompanying poisoning campaign has been necessary. The required study of the methods and capabilities of the animals involved in this intricate warfare with them has taught us much as to their life, both physical and mental, and hence may be added to the year's steps forward in the path of zoological progress.

ZULULAND, a district of the Province of Natal, Union of South Africa, annexed thereto in 1897. Its area is 10,424 square miles with a population of 212,700.